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STATE OF CALIFORNIA

DEPARTMENT OF NATURAL RESOURCES

Division of Fish and Game

THIRTY-FOURTH BIENNIAL REPORT

For the Years 1934-1936

39139

DR. E. C. MOORE, President, State Fish and Game Commission.

A. T. JERGINS, Fish and Game Commissioner.

I. ZELLERBACH, Fish and Game Commissioner.

HERBERT C. DAVIS, Executive Officer.

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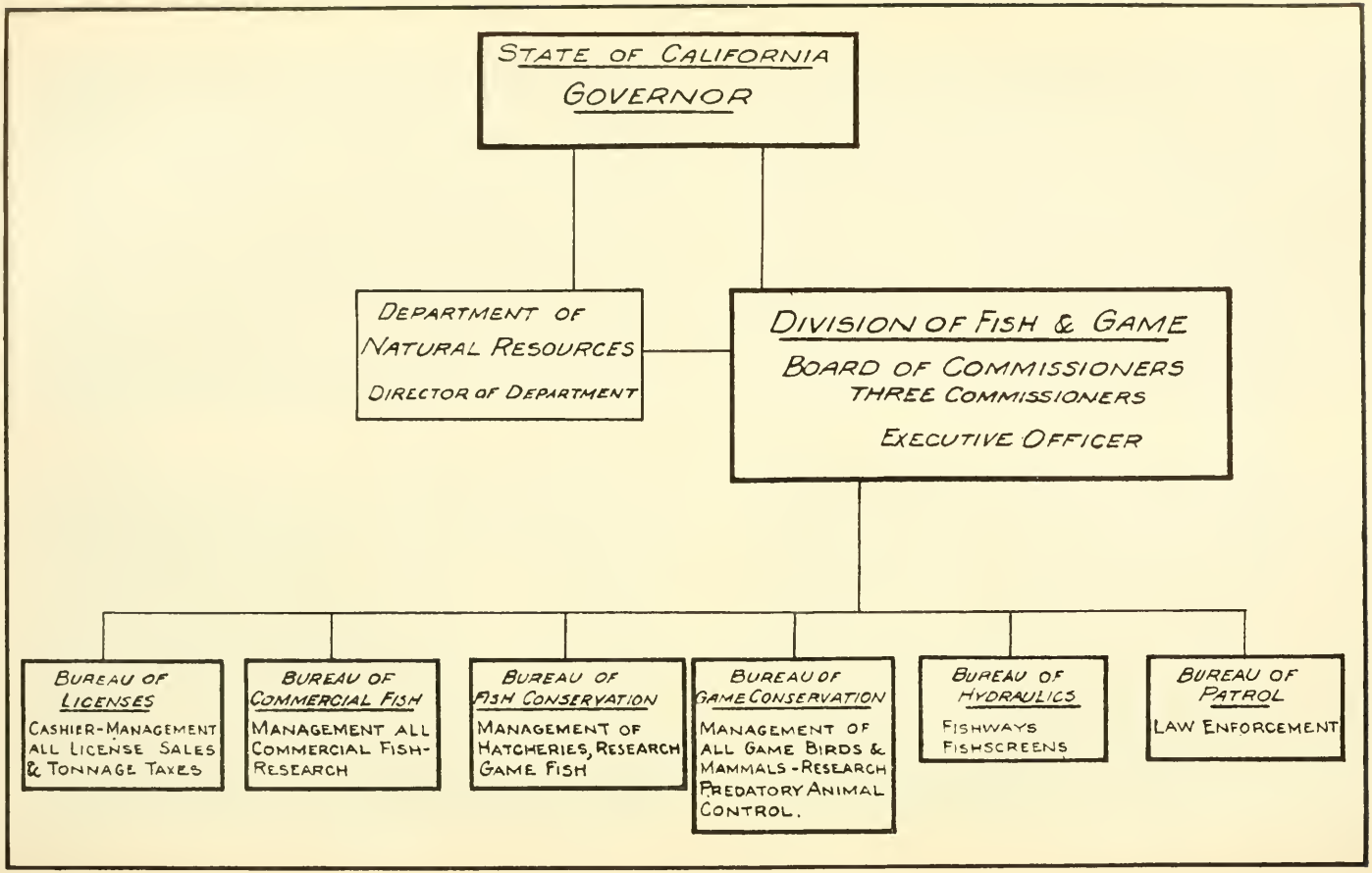

Organization of Division of Fish and Game

In Memoriam

It is with much regret the Division reports the following deaths of members of its staff during the biennium and wishes at this time again to give recognition to the faithful and efficient service rendered by these men.

	Entered Service	*Died*
K. J. Ransdell	July 21, 1924	Nov. 21, 1935
Roland H. Dobler	March 10, 1925	May 22, 1935
William H. Shebley	May 16, 1883	Nov. 7, 1935

LETTER OF TRANSMITTAL

September 1, 1936.

To His Excellency, Frank F. Merriam,
Governor, State of California,
Sacramento.

Sir: In compliance with the provisions of section 32 of the Fish and Game Code, we submit herewith the Thirty-fourth Biennial Report of the Fish and Game Commission, covering the period July 1, 1934, to June 30, 1936.

The report consists of a summary of the activities of the Fish and Game Commission. A brief summary by the Executive Officer and detailed reports by the chiefs of all bureaus. In addition, there are complete statistical reports covering the receipts and disbursements, as well as statistics on fish and game management.

We wish to express our appreciation to the Governor of California and to the heads of all the various state departments with whom we have had the pleasure of working, and to the members of the legislature for the splendid sympathetic cooperation which they have given to the administration of fish and game.

Respectfully submitted.

E. C. Moore, President.
I. Zellerbach, Commissioner.
A. T. Jergins, Commissioner.

THIRTY-FOURTH BIENNIAL REPORT

REPORT OF BOARD OF FISH AND GAME COMMISSIONERS TO THE GOVERNOR OF CALIFORNIA

This biennial report, covering the period July 1, 1934, to June 30, 1936, is unique in several respects because it covers a transitional period in the administration of fish and game in the State of California. A number of things have occurred to bring about this transition.

First, the people of the State of California as well as throughout the entire United States during this period suddenly realized that their fish and game resources were being subjected to a strain which they might not survive, but also realized that the use of these resources was a major item in the economic structure of the State, and their perpetuation, preservation and rehabilitation was vitally necessary.

Another factor influencing the transition was the willingness on the part of the government of the State of California to readily adjust itself to this recognition being given to fish and game by the people. For the first time in many years, the Governor of California personally sponsored a program designed to accomplish the perpetuation of our fish and game resources.

On November 5, 1934, your excellency announced a program for the management of fish and game consisting of six major points, which it has been the pleasure and privilege of your Board of Fish and Game Commissioners to carry out. We believe that every point in this program has been put into effect.

The results of this program are already becoming visible in terms of fish and game reaching the hunters' and fishermen's bag and creel.

May we pause at this point to compliment and congratulate you in having given to the State this sound and comprehensive program, and may we also congratulate the State of California for having a chief executive willing and able to formulate this program and assume the leadership in fundamental conservation.

Your program necessitated a good many changes in the structure of the Division of Fish and Game and in its procedure. Since it was first organized in 1870 the Fish and Game Commission has accumulated a vast amount of knowledge of the vital points necessary for the successful management of fish and game, giving us a broad, solid foundation upon which to build the new and reorganized structure for the future management and control of these resources along the lines outlined by you, thus making it possible intelligently and with fundamental soundness to launch this long-time and far-reaching program, looking well into the future, building not only for today but for all time to come.

Your first point in your program called upon the people of the state to stand united on conservation policies, requesting their active

support to carry them out. This first point has been accomplished even beyond our fondest hopes.

Prior to this time, the various organizations of conservation and your Fish and Game Commission were somewhat separated, these organizations, in some instances, having come into existence largely for the purpose of influencing the state and its Fish and Game Commission to do certain things which they desired. The Fish and Game Commission found itself almost always in the defensive position. Your policy has caused a complete reversal of this condition. Your Commission is no longer on the defensive, but has definitely assumed the leadership in conservation, and the organized conservationists have unanimously welcomed this leadership and have united with the Fish and Game Commission to reach the common goal. They have truly undertaken to carry on the conservation work to a point far beyond that which your Fish and Game Commission could reach with the available finances. They have educated the public and the courts to an appreciation of the value of our resources. They have themselves aided in propagation and restoration. They have counseled and advised with your Commission. They have put California in the forefront in the management of fish and game through their united support.

The second point in your program called for the establishment of a sound and far-reaching method of management, looking not only to the restoration of what has been lost of the resources but to a perpetuation for future use. We are proud to report to you that the program of your Commission has been completely reorganized to obtain this end. Sound and economic methods of production are in vogue looking to restoration. Sound methods of statistical analyses of the annual take have been put into effect with a view to treating the fish and game management as a merchandising enterprise. We now have the facts on which to base our replacement of each year's take, and then to add a little more so that the fishing and hunting may be improved and still have an adequate supply for the future.

Point three in your program called for the prevention of wanton, careless and malicious destruction of fish and game. We are pleased to report that this program has received our specific attention in four directions. First, to prevent the destruction of fish through losses by diversion of water we reestablished the bureau in the Division to handle the installation of fish screens and fishways. Because of the peculiarities of the laws on this subject, there has been some delay in accomplishment. However, just before the close of the biennial period, we succeeded in arranging a cooperative set-up with the United States Forest Service and the Civilian Conservation Corps, and screens are now in course of construction. The principal destruction of game comes through fire. Your Commission is pleased to report that they have made every effort to impress upon the people of the State of California that the prevention of fire is vitally necessary in the protection of fish and game and to this end the personnel of this Division has lent every effort, cooperating with and receiving the cooperation of your State Division of Forestry, State Division of Parks and the U. S. Forest Service.

The third item of destruction is pollution of the waters of the State. The personnel for attacking this problem has been trebled and

we are pleased to report that more has been accomplished in this direction during the past two years than at any time in the history of the state. The control of oil leakages in southern California has restored some valuable fishing waters in that area, also caused a marked decrease in the amount of pollution on the beaches. In other sections of the State equally encouraging results have been obtained in controlling industrial wastes in the Eel River, in the Sacramento and San Joaquin rivers and in many other places. The fourth item of destruction is the predatory bird and mammal. During the biennium, a comprehensive program of predatory animal control has been established. The personnel assigned to this work has been increased from four to fifteen, and it is anticipated that this number will be doubled during the next biennium. An informal, cooperative arrangement has been made with the United States Bureau of Biological Survey and the State Department of Agriculture, the other two agencies concerned with predatory animal control. Through this informal, cooperative agreement, each of the three agencies, including ourselves, have undertaken the responsibility of predatory animal control in definite areas, eliminating overlapping and providing for increased control of the predator.

The fourth point in your program is adequate law enforcement. We are happy to report to you the complete reorganization of the California Fish and Game Patrol. This body of men with no increase in its personnel has been so reorganized and rehabilitated that today by comparison we feel that it is one of the outstanding conservation patrols in the United States. The men have more than doubled the effectiveness of their work. They have willingly and gladly adopted your theory of enforcement to protect the game by preventing violations thereby conserving the supply and making the apprehension of the violator of secondary importance to prevention. We have increased the number of boats for ocean patrol work in order to more adequately protect the sport and commercial fishing resources along the 1300 mile coastline of this State, an area which today provides fishing in an abundance found nowhere else in this country.

The fifth point in your program called for adequately dealing with the perpetuation of the California sardine industry with particular reference to control of the outside floating reduction plants. Your Commission has worked diligently on this matter for two years and believes that it has made very definite headway by getting the industry itself to realize the necessity for this control. Your Commission has also been able to demonstrate that the exploitation of this resource has reached and passed its maximum and that control is absolutely necessary in order to prevent the destruction of the fishery. We are pleased to report that your Commission, the industry which uses the sardine onshore and the organized conservationists of the State are united. There remains only the accomplishment of legislation to attain the desired results.

Your sixth and last point dealt with the enlisting of the services of competent and experienced men. To this end, we are pleased to report that the reorganization of the Division of Fish and Game which we have effected for the purpose of carrying out your program has provided definitely for the selection and training of competent men

for the future. Your Division is now organized into six bureaus each headed by a competent and trained specialist protected under the civil service law. These six bureau heads constitute the backbone of the entire structure of the Division, and are the men through whom your Commission carries out its program. We have provided for an apprentice grade under civil service through which to recruit young men of educational and personal qualifications suitable for fish and game work. These men are given a thorough course of training in this apprentice grade and it will be from these young men that most of the personnel of the Division will come in the future. Thus, giving to the State competent, trained and experienced personnel to carry out the long-time program of fish and game management.

We are proud to have been able to get each of your points in your program underway during this biennium. This will enable us to enter the next biennium with a complete and well-worked out program so that you may watch with us the progress which is bound to result.

Respectfully submitted.

E. C. Moore, President.
I. Zellerbach, Commissioner.
A. T. Jergins, Commissioner.

REPORT OF THE EXECUTIVE OFFICER TO THE BOARD OF OF FISH AND GAME COMMISSIONERS

Your Executive Officer is pleased to report that during the past biennium the Division of Fish and Game has accomplished the reorganization directed by you. The Division now consists of six bureaus as follows:

Bureau of Fish Conservation, Dr. J. O. Snyder, Chief.
Bureau of Game Conservation, J. S. Hunter, Chief.
Bureau of Patrol, E. L. Macaulay, Chief.
Bureau of Commercial Fisheries, N. B. Scofield, Chief.
Bureau of Hydraulics, John Spencer, Chief.
Bureau of Licenses, H. R. Dunbar, Chief.

The scope of work of each bureau has been definitely extended so that your entire program of fish and game management is well underway. The six bureau heads now constitute a working cabinet through which your personnel is all directed and your program carried out. Your Executive Officer acts as coordinator of the activities of the various bureaus and as liaison between these directing heads and yourselves.

Your Executive Officer is submitting as a part of his report a brief summary of the activities of each of these bureaus during the biennium. In addition, your Executive Officer is submitting a detailed report of each bureau.

During the biennium, certain economies have been effected in the executive office. The positions of assistant executive officer, lecturer, publicity man and chief, Bureau of Research and Education, have been abolished and no new positions created to take their place, thus reducing the salary and expense account item from approximately $18,000 per year to $7,000 per year.

In addition, it is our belief that the total output in terms of effort and fish and game has been materially increased through reorganization and revitalization with no appreciable increase in personnel and expense.

Your new fiscal policy which consisted of making each activity of the division self-supporting as far as possible has been put into effect. The budget for the coming biennium has been written under this policy. All money received from hunting licenses being returned to the protection, preservation, propagation and administration of game; and the money received from fishing licenses to the protection, preservation, propagation and administration of fish; the money received from commercial fisheries is already restricted by law to the protection, preservation, research and administration of commercial fisheries.

During the biennium, your executive officer has made two trips outside the State of California. One in September, 1935, to Santa Fe,

New Mexico, and Tulsa, Oklahoma, to meet with the Western Association of Fish and Game Commissioners and the International Association, as well as the American Fisheries Society. The second time, was for the purpose of going to Washington, D. C., to appear before the congressional committee considering legislation looking toward the control of the floating reduction plants.

There have been some changes during this biennium in the personnel of the Commission and the executive office. At the opening of the biennium, the Board of Fish and Game Commissioners consisted of Mr. J. Dale Gentry, President; Mr. Earl B. Gilmore and Mr. I. Zellerbach. Major John L. Farley was the Executive Officer. On December 11, 1934, the Governor of California appointed Mr. Charles N. Cotton as a member of the Board of Fish and Game Commissioners, vice Earl B. Gilmore, resigned. On December 15, 1934, the Board of Fish and Game Commissioners employed Mr. Herbert C. Davis as Executive Officer, to replace Major John L. Farley. On February 1, 1935, the Governor of California appointed Dr. E. C. Moore and on February 5, 1935, Mr. C. E. Houchin as members of the Board of Fish and Game Commissioners, vice J. Dale Gentry, resigned February 4, 1935, and Charles N. Cotton, resigned. On February 9, 1935, the Board of Fish and Game Commissioners met and selected Dr. E. C. Moore President. On January 7, 1936, the Governor of California appointed Mr. A. T. Jergins, Commissioner, vice C. E. Houchin, resigned.

At the close of the biennium, the Board of Fish and Game Commissioners consisted of Dr. E. C. Moore, President, I. Zellerbach and A. T. Jergins, with Herbert C. Davis as Executive Officer and secretary to the Commission.

LIBRARY

The condition of the library on the whole is healthy. There has been an increase of 346 in the number of bound volumes, valued at $1,201.08. This has come about despite the continued reduced budget. Under the projects SERA and WPA 951, the accumulated periodicals have been bound, accessioned, and evaluated, making total volumes ending this period 1771. These represent $381.69 by gifts and $819.39 by purchase.

Scientific and other pamphlets received during this period have amounted to 806, valued at $89.54; total accessioned to date 1500.

The number of periodicals regularly received has been reduced, either by discontinuance of publication and/or "exchange" privilege. Those received and circulated number 125.

On September 1, 1935, the library was taken from the Bureau of Education and Research and placed under the supervision of the Executive Officer, as the former bureau was abolished. Effective this date the librarian's time was increased somewhat over the last period.

I submit below a brief summary of the reports of each bureau which are attached hereto in their entirety.

BUREAU OF FISH CONSERVATION

This bureau, the former Bureau of Fish Culture, has succeeded in so coordinating its activities during the biennium that it now functions as a single unit rather than as a group of individuals. As a result of

this unification of effort, the improvement of hatchery methods and the adoption of a sound fish planting policy, great strides have been made in its primary function, the production of trout and salmon. An increase in the production of small mouth bass has been assured by the completion of the Central Valleys Hatchery near Elk Grove, which will be devoted entirely to the production of spiny rayed fishes. The duties of fish rescue, which have been assumed by the Bureau of Fish Conservation, are being coordinated with the spiny rayed fish production program.

The research activities of this bureau are closely correlated with production and distribution. . Among the problems that have been considered are the weighing and counting system of enumerating the hatchery output, diet and disease control, the maintenance of an egg supply on a salvage basis, stream and lake surveys, and the consideration of the role played by the so-called rough fish in the waters of the State. The improvement and upkeep of the twenty-six hatcheries and twenty-seven egg taking stations constitutes a problem in itself which has been made easier of solution by an efficient system of hatchery inspection. Extensive construction and improvement have been accomplished through government relief agencies, notably the new hatcheries at Basin Creek, Prairie Creek and Elk Grove.

The Cooperative Trout Investigation, in which the California Division of Fish and Game, the United States Bureau of Fisheries and Stanford University have been taking part, has just completed four years of activity which has resulted in the uncovering of a large amount of valuable information, much of which has already been published.

BUREAU OF GAME CONSERVATION

The Bureau of Game Refuges and the Bureau of Game Propagation were combined during the biennium into one organization, the Bureau of Game Conservation. All Division functions having to do with game birds and mammals are being administered by this bureau.

Since this reorganization, there has been laid the foundation for game management in California based on the determination of the annual kill of our several game species through the compilation of statistics provided by sportsmen on their hunting license applications. The employment of the statistical method in the solution of game problems is only now in its second year, but the results have been extremely gratifying.

The state game farms have increased their production considerably during the biennium. This has been due to the continued improvement of game farming methods and to the employment of some eight hundred additional holding pens provided by sportsmen throughout the state. The quail refuge program that is being conducted in connection with the Los Serranos Game Farm in southern California, is demonstrating the degree to which natural propagation may be stimulated by management practice.

The maintenance, at a high degree of efficiency, of the waterfowl refuges and the observation of waterfowl conditions has been continued. Studies have been made of California's big game herds, particularly the mule deer and antelope of the northeastern corner of the

State, and will provide the basis for the determination of future policies.

The predatory animal control program has been pursued with more than usual vigor due to an increase in the funds available for the work. The results have been pleasing, not only to the sportsmen but to the stockmen as well.

BUREAU OF PATROL

The Bureau of Patrol has undergone a number of changes for the better during the biennium. The reorganization of the patrol districts and the administration of them, the uniforming of the patrol force and a general overhauling of patrol activities has resulted in a new high degree of efficiency and a consequent increase in the number of arrests and convictions. The addition of two new boats to the fleet that patrols our bay and coastal waters has enabled California's "navy" to keep pace with the land forces in increased activity and efficiency.

The creation of the civil service grade of Assistant Warden has met with unanimous approval. These young men, the first of whom are now being trained in all phases of Division activity, constitute the group from which our future wardens will be drawn.

Major changes in bureau activities have been the transfer of fish planting to another bureau and the assumption of a large part of the work necessary to control the pollution of California waters.

During the biennium the patrol force was made smaller by the retirement of two captains and three wardens, and by the death of Warden K. J. Ransdell.

BUREAU OF COMMERCIAL FISHERIES

This last biennium, with the landings of fish and shell fish in California exceeding the billion-pound mark for the first time in 1934 and again in 1935, has been one of increased activity for the Bureau of Commercial Fisheries. The sardine fishery, the largest in the State, has of course received the most attention. This bureau continues to provide the Fish and Game Commission with biological and statistical ammunition for use in its fight against sardine exploitation, a contest which has been made much more complicated during the last two years by the increasing activity of off-shore reduction plants, which must come under State control before sardine conservation can be accomplished.

California's rapidly growing mackerel fishery is demanding more time and attention and promises to become of still greater importance. The solution of major problems in connection with the oyster industry is being undertaken and a fight to save the remnant of California's salmon fishery is imminent.

The California State Fisheries Laboratory at Terminal Island is carrying on research work which has as its goal the determination for each of our more important fisheries the point at which over utilization occurs so that a maximum yield may be established for each fishery. The major research projects at the present time are sardines, mackerel, tuna, the flat fishes, sport catch records and the compilation of statistics. The minor research studies are numerous and include, among other things, migration studies of striped bass, depletion studies of

the Pismo clam, and a study of Monterey Bay which is being carried on in cooperation with Stanford University.

Six fish bulletins and numerous short articles have been published by members of the laboratory staff during the biennium.

FISH EXCHANGE

According to the requirements set forth in Chapter 825, Statutes of 1933, the Fish Exchange unit of the Bureau of Commercial Fisheries was abolished on June 30, 1936. During the year 1934–35 this unit carried on an extensive publicity campaign for the purpose of increasing the consumption of fresh fish. As a part of this program exhibits were shown at the state and county fairs, cooking demonstrations were held and recipe books were distributed to housewives. In addition, over 1200 retail dealers were contacted and given advice relative to the improvement of fresh fish marketing methods.

BUREAU OF HYDRAULICS

This bureau was reestablished during 1935 after a period of inactivity which was the result of the passage of a bill requiring the Division to pay one-half of the cost of screening diversions which are destructive to game fish. The personnel of the bureau has been engaged in preparing plans and specifications for fish screens which will be constructed as funds are made available. Plans have been formulated for the screening of some 250 diversions in the Klamath River drainage basin alone.

The reinstallation of the fishway at the Benbow Dam on the South Fork of the Eel River and the careful testing of the Burkey electric fish stop have been supervised by engineers connected with this bureau. In addition, the routine inspection of existing fish screens and ladders is being carried on as part of the every day work of the hydraulic staff.

BUREAU OF LICENSES

The Division is supported entirely by the sale of licenses, the income from privilege taxes and fines for the violation of game laws, and it is therefore gratifying to note that this bureau reports a substantial increase in the income of the Division during the biennium just ended. A comparative analysis of the income of the Division during the past four bienniums is an interesting addition to the usual financial statement.

The adoption of a new style of license identification button became effective in 1935 and, during that same year, a blank on which each sportsman was asked to list the amount of fish or game taken during the preceding year was made a part of the hunting and fishing license applications. Boats, catering to fishermen for profit, were licensed during 1935 and the section of the Fish and Game Code which requires a license to angle for game fish in the ocean was enforced for the first time during 1936.

To facilitate the sale of licenses the adoption of a uniform system of license distribution has been urged. Licenses are distributed to vendors at the present time by three separate and distinct methods.

On behalf of the personnel of the Division of Fish and Game the Executive Officer desires to express their gratitude to the Board of Fish and Game Commissioners and to the Governor of California for their sympathetic understanding of our problems, and also for the splendid program of fish and game management which you have provided for us to execute.

Respectfully submitted.

HERBERT C. DAVIS,
Executive Officer.

REPORT OF THE BUREAU OF FISH CONSERVATION

By J. O. Snyder, Chief

The former Bureau of Fish Culture is now known as the Bureau of Fish Conservation. This slight change in name carries with it an unmeasured amount of added responsibility. It definitely expresses the theory that fish propagation is a part of fish conservation. Fortunately the State of California has not reached the condition when natural propagation is a thing of the past. Artificial propagation and the distribution of its product must therefore take into account the work of nature, so long as and wherever that remains productive. The introduction or spread of competing species must be guarded with the greatest care. Artificial propagation should be self sustaining in all cases excepting only where the taking of wild eggs is plainly salvage. Furthermore, the interest of the bureau rests not with the production of small fish alone, but is extended through transportation and planting, even to the angler's basket. The change in name may also assume that the bureau is in a measure responsible for such scientific inquiries or investigations as pertain to the game fishes. The operations of the various hatcheries are now completely coordinated, each having lost something of its previously assumed sectional and individual importance. Each employee now has an opportunity to regard himself as one of a large organization, while his interests are broadened accordingly.

The experimental propagation of bass has completed its fourth year and amply demonstrated its feasibility in this region. Brood stocks of small mouth bass have been spawned, fish have been successfully hatched and reared, methods of transportation and planting have been tested, and fish produced at the experimental plant have been traced to the angler's basket. Kentucky bass have been introduced to the ponds at Friant where a brood stock is now established, and from where one small experimental planting has been made. It now remains for those in charge to execute a definite plan of distribution for both of these species, and determine the results of the work as accurately as possible, that these may be balanced against the cost.

There is a constantly recurring agitation for the introduction of exotic species of fish. While some requests and suggestions are so evidently ill-considered as to be dismissed at once, others remain to be brought up from time to time. Our native species together with those already introduced furnish an ample fauna, and if with proper conservation and propagation these can not be made to sustain a reasonable amount of sport fishing, the remedy is not to be found in the introduction of other species. The introduction of a foreign species may be simple enough while the result may be appalling.

In assuming charge of the duties of fish rescue by this bureau the activities of that work and the propagation of spiny rayed fishes have

been combined. The work is now centralized at the Central Valleys Hatchery near Elk Grove, which is nearing completion. This consists of numerous stock and brood ponds of various areas, daphnia ponds, a deep well capable of supplying ample water, residences for foreman and aids, laboratory and office, garages and storage buildings. These are on a tract of 40 acres well located in relation to transportation, being near the center of the region of sunfish and bass fishing. Desirable rescued fish may be held at this station until opportunity offers to transport them to places where their introduction is most needed. The operation of this new plant in connection with fish rescue is intended to provide for growth and expansion while adding economies and efficiency to both propagation and rescue.

The recently adopted enumerating system which is a combination of weighing and counting is now in effect. It has already proven its worth in furnishing fairly accurate statistics relating to growth, production, amount of food consumed, an account of losses and other items relating to the cost and effectiveness of operation. Guesses and estimates have given place to actual determinations. These begin with the eggs and end with planting, each can of fish in transportation now bearing a tag which declares the species, actual weight and the calculated number of fish which it contains.

Results of the stream survey are rapidly accumulating. Information relating to areas of considerable extent is now being tabulated so as to make it easily available, and its relation to a present and future conservation and stocking policy is becoming plainly evident.

The bureau is now operating on what appears to be the most promising program when its available personnel, equipment, funds, and general knowledge of the situation are considered. However, the desire for an expressed and published policy of conservation, involving the numerous game fishes of the State is very evident. Such a policy will not be easily formulated, and it will of necessity be somewhat involved and complicated, for it must reflect some of the unrivaled diversity of natural and artificial conditions which California presents.

The recent and great extension of irrigation and power installations is resulting in marked changes in river conditions. Artificial lakes, in some cases of large size, are appearing while stream flow is being correspondingly changed. The original environment of the native game fishes is being profoundly altered while we are unaware and entirely ignorant of the probable results. It appears desirable that means be soon provided for an extended study of the situation, and so directed as to supply at least some desired information relating to what is actually transpiring.

Questions, opinions and suggestions relating to the so-called rough fish in our waters are constantly appearing. We are lacking in accurate information relating to nearly all of these forms and until something more definite is known of their life histories and ecological interrelationships, mere speculations and recommendations relating to them are futile, perhaps even harmful. Danger of their spread through the use of minnows as bait should be guarded against. A promising beginning has been made in an investigation of some native minnows, and one very creditable report lately appeared.

Investigations dealing with disease control, various diets, methods of feeding, and improved hatchery operation are progressing. In fact they have already demonstrated their actual worth. An experimental hatchery and small laboratory are available at the Mt. Shasta plant. The location is well chosen as the results of experimental work in charge of the biologist or toxicologist or both may be immediately tested under control in actual hatchery procedure. A survey of disease conditions and the general character of the water supply of the various hatcheries is being carried on.

The system of hatchery inspection now in vogue has produced good results which in some cases are very evident. It is so conducted as to be helpful to both the central office and the hatchery involved. The inspector's report is largely guided by printed sheets with numerous questions or suggestions. It is submitted in duplicate so that its information may be available to the hatcheryman directly concerned. It considers many details relating to the condition of buildings, equipment, grounds, water supply, and fish, methods of feeding, losses, evidence of disease, housing conditions, even the personal appearance of employees.

Opportunity for the personal improvement of employees is not overlooked. They may profit by the visits of inspectors and those connected with special investigations. The library is accessible through the mail, lists of available books and papers being in each hatchery. The annual school and conference, now an established affair, provides among other things for the discussion of problems of general interest. The occasional transfer of younger members of the force secures the benefits of wider experience.

At present there is ample provision for the eggs of eastern brook, Loch Leven, cutthroat and golden trout, king and silver salmon, necessary for artificial propagation. To fill the demand for rainbow trout eggs is still an unsolved problem which is rapidly growing more acute. The purchase of eggs from without the state is undesirable, and the supply from that source is insufficient and not dependable. The taking of eggs from wild sources should and eventually will cease except in cases where they may be regarded as salvage. Investigation and experimentation bearing on the problem are under way but the results, partly from lack of time, are not as yet very encouraging.

Under the recent organization the allotment and distribution of fish becomes a responsibility of this bureau. This may be regarded as entirely desirable as it will aid in the centralization of activities relating to fish conservation. Aid and cooperation with members of other bureaus and with interested sportsmen may be sought and directed to the best advantage. Marked progress has been made in a proper balance of allotments and in a careful consideration of distribution. Methods of transportation which will keep abreast with the improvement and extension of roads and automobile development are constantly considered. Minor details such as aeration and cooling systems for trucks, resting ponds at secondary centers of distribution, cooperative ageing ponds, etc., claimed attention.

Continued improvement in the general betterment of hatchery equipment including buildings, grounds, and especially housing con-

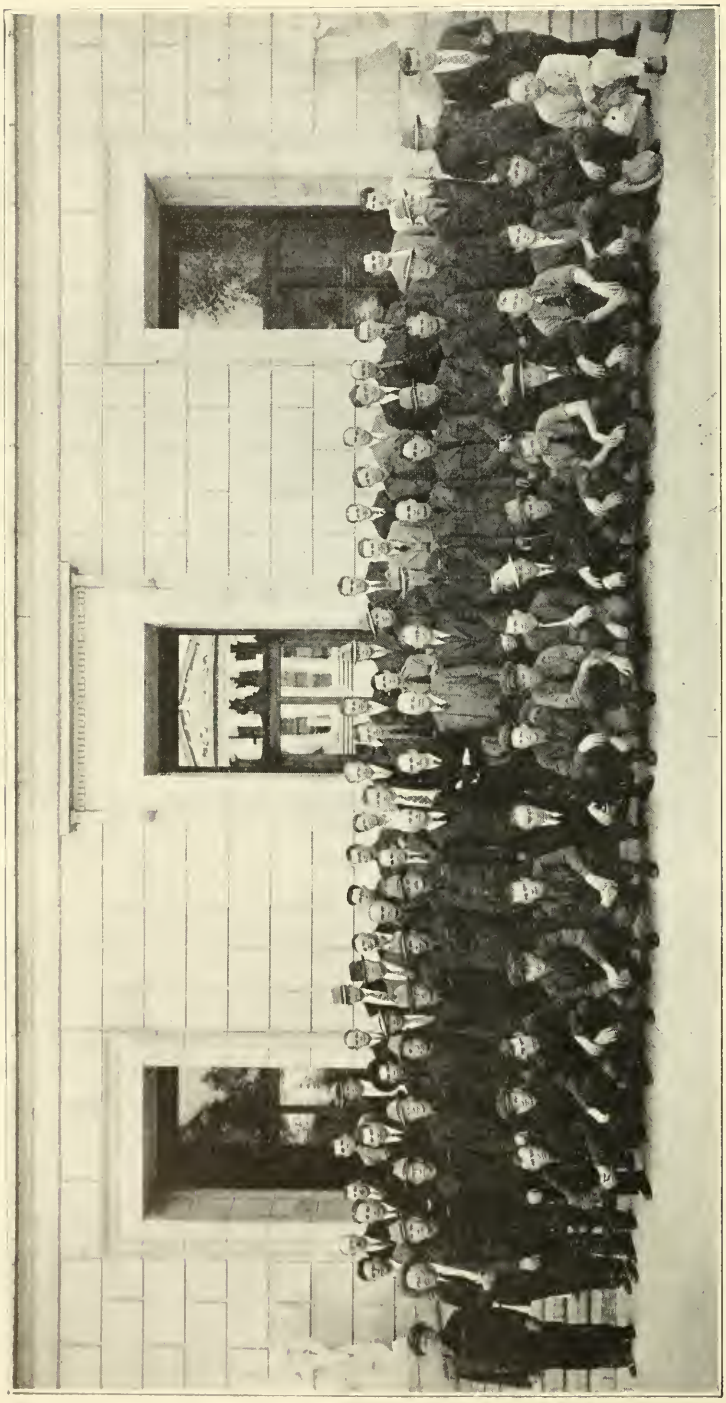

FIG. 1. Bureau of Fish Conservation Hatchery Employees. October 13, 1936.

ditions of the men employed may be reported. The adopted policy of first placing each worthwhile plant in the best possible condition for productivity before making new locations appears to be sound. As long as desirable operating costs for the hatcheries now maintained by the bureau are beyond the budget allotment, it is unwise to add to the number. This should not preclude the study of promising new locations, an extended test of such, or even the acquisition of water rights. In fact experimentation at certain partly explored sites is very desirable. Difficulties relating to the ownership of the water supply at several hatcheries have been a constant source of annoyance. These are being cleared up wherever it is possible. The necessity of making the water supply thoroughly secure before locating a hatchery seems to be at last well understood. The water supply is the most difficult thing with which our hatcheries now have to contend. In many cases its unalterable character is the determining factor in relation to growth, ageing of fish, control of losses, etc. It alone often determines the time of planting and the size of fish produced. The production of large fish, 7 or 8 inches long, as advocated by many sportsmen is absolutely impossible in many of our hatcheries, because of adverse water conditions.

The following hatcheries have been operated during the biennium: Mt. Shasta, Burney Creek, Fall Creek, Prairie Creek, Lake Almanor, Domingo Springs, Fort Seward, Cold Creek, Brookdale, Big Creek, Feather River, Yuba River, Lake Tahoe, Blackwood, Mt. Tallac, Alpine, Fern Creek, Mt. Whitney, Basin Creek, Yosemite, Kings River, Madera, Huntington Lake, Friant Bass Ponds, Kaweah, and Forest Home. These have been supported by some 27 egg taking stations. Some of these are of necessity more or less temporary, while others, especially the Klamathon salmon station, are substantial and perhaps permanent institutions.

A record of production and planting is presented in the appendix by J. H. Vogt, Assistant Chief.

Salmon propagation centers at Fall Creek, some support being received from the Mt. Shasta, Prairie Creek and Big Creek hatcheries. Considerable experimentation with the introduction of silver salmon in certain inland waters has shown the possibility of using them to assist in the maintenance of trout fishing. An investigation of the life history, distribution, and other matters relating to the silver salmon is greatly needed as a direct aid in the conservation of the species in the State. The value of this salmon as a sport fish is not sufficiently appreciated.

Extensive construction and improvement have been accomplished through government relief agencies. Notable among these are new hatcheries with their accompaniment of residences, etc., which have been built at Basin Creek, Prairie Creek, and near Elk Grove. Each of these is well planned and presumably adapted to its particular function. The land holdings at Basin Creek and Elk Grove are extensive enough to deserve improvement as small parks. Lesser improvements were completed at Fall Creek, Lake Almanor, Brookdale, Kings River and Forest Home. Purchase of the latter place was completed and an overhaul of buildings, ponds and equipment is in progress.

The Cooperative Trout Investigation, the U. S. Bureau of Fisheries, the California Division of Fish and Game and Stanford Uni-

versity participating, has completed four years of active work. Some 18 published papers relating to various phases of the investigation have appeared and others are in preparation. Some recommendations, the results of careful tests, have already been accepted and put into practice. In 1934 an allotment of $20,000 to the United States Bureau of Fisheries from the Public Works Administration permitted Dr. P. R. Needham and Mr. A. C. Taft of the cooperative investigation to make an extensive stream and lake survey in the state. The work was mostly confined to waters within the Klamath, Sequoia, Inyo and Plumas national forests. The results and recommendations embodied in reports are now available. The principal activities of the trout investigation have centered about Scott and Waddell Creeks in Santa Cruz County, at Beaver and Fall Creeks tributary to Klamath River, and at Hot Creek ponds in Owens Valley. From these points it has of necessity spread to other localities which offered particular opportunities. The stream studies have much to do with the migratory habits and other features of the life history of rainbow trout, while the work at Hot Creek concerns itself largely with selected brood stocks, the production of eggs, studies in growth, proper diets, hatchery procedure, etc.

The bureau has attempted in so far as possible to conduct its work on scientific principles and base its procedure on established facts. Suggestive and constructive criticism have been alike received and carefully considered. And finally it has attempted to maintain a spirit of friendly cooperation with sportsmen and others interested in the conservation of game fishes and the maintenance of sport fishing.

REPORT OF THE BUREAU OF GAME CONSERVATION

By J. S. Hunter, Chief

Game conservation today involves many more problems than were dreamed of in the early days when protective laws were first adopted. In California, with a constantly increasing population and the development that naturally goes with it, it is becoming more and more difficult to keep ahead of the harvest of game and fish by the army of licensed hunters. Guess work as to supply and demand will not give the information we must have. In order to secure the information necessary, we must have the hearty cooperation of the men who hunt and fish. It is for that reason that we have requested all sportsmen to give us a record of the amount of game that they harvest each year. It is nothing more or less than the successful storekeeper does every year in taking stock. Just as this man must know what is on his shelves and what goes over the counter, we must know what is in the field and the toll that has been taken. The first year's tabulation of the kill has proven that as a game state California is in the first rank. Approximately 50 per cent of the 122,000 hunters tabulated gave the information requested. This voluntary return is very much better than the compulsory return that is required in certain eastern states. The actual amount of game reported killed during the 1934–35 season was:

Doves	580,110
Quail (all species)	560,481
Ducks	389,242
Pigeons	51,056
Geese	40,278
Pheasants	25,220
Rabbits (Cottontail and Brush)	251,891
Coyotes	14,259
Bear	447

By just what factor these figures should be multiplied to make up the actual kill of the 170,000 hunters is problematical but the real kill was certainly double the above figures.

The distribution of the game of the state is very well shown by the list of the ten leading counties in the take of the various species of game and by the composite map on page 26. One of the most surprising and interesting records obtained was as to the number of coyotes killed by hunters, viz., 14,259. This figure, as stated above, should be multiplied by two to give the approximate number. Coyotes are regarded by sheepmen and farmers generally as their worst enemies. Certainly the hunter is not an altogether undesirable individual to have roaming over the hills when he kills in his travels this vast number of destructive predators. The quail harvest would have been much larger had it not been for the fact that by regulation the southern counties were closed to hunting in 1934.

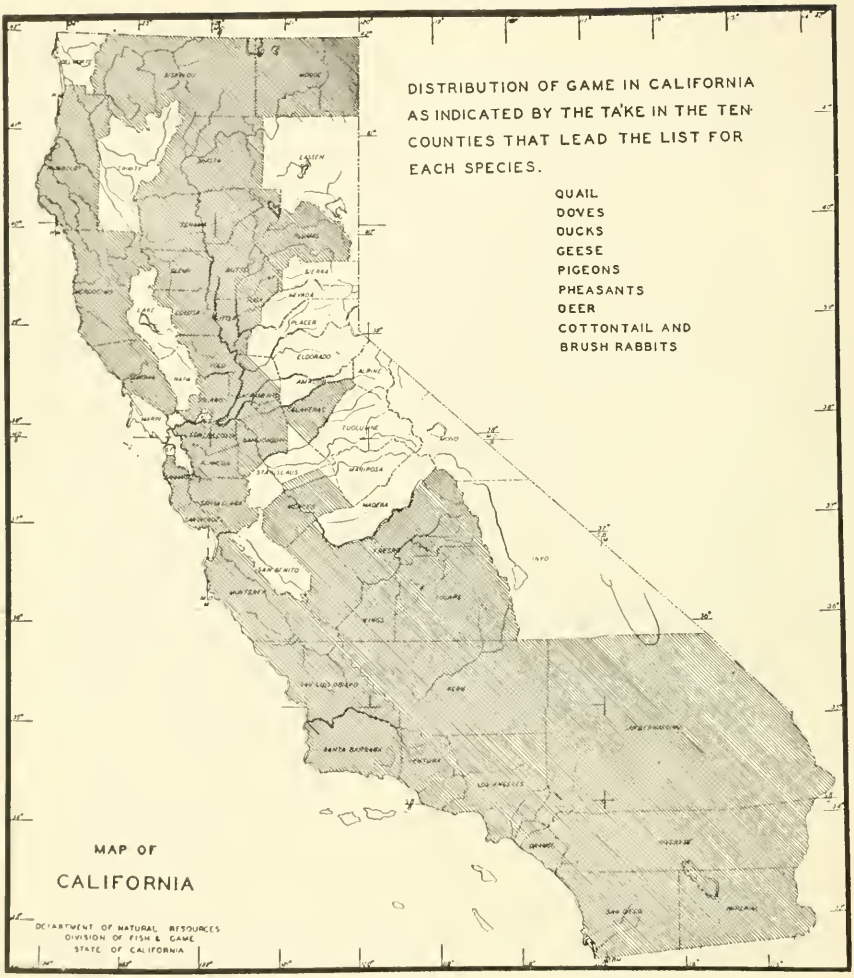

FIG. 2.

Deer hunters travel more than do any other class. Only 44 per cent of the deer taken were killed by residents of the county in which the animals were killed. Other than ducks and geese, small game hunting is done mostly in the county of residence. The percentages are as follows:

	Per cent
Deer	44
Waterfowl	50
Bear	56
Coyote	65
Pheasants	70
Doves	72
Rabbits (Cottontail and Brush)	73
Pigeons	75
Quail	75

The data secured the first year have been most valuable and interesting and as years go by the entire conservation program will be based on the definite information that is furnished the Division by the hunters themselves.

In past years our game farms have been limited in their production by the amount of money that could be allotted to that activity. Fortunately, we were able to increase the allotment for the 88th fiscal year by nearly one-third and for the 89th and 90th fiscal years the amount will be practically double that of the previous biennium. We have now definitely established the ringneck pheasant as a game bird in California. In certain parts of the State the species is abundant enough to stand a longer open season or larger bag limit. In the south where our activities have been concerned more with quail, very encouraging results have been obtained. The production of the game farms has been satisfactory and the increase on our quail refuge areas has been remarkable. Greater attention will be given in the future to the raising of Chukor partridges, as we believe that this species will fit in most excellently in parts of our State that are almost gameless at the present time.

The deer situation, generally, is satisfactory. There has been some apprehension as to the effect of the repeal of the forked horn mule deer law on this species particularly in the northeastern part of the state. It was believed at the time the law was amended at the last session of the legislature that it would do away with the practice of some hunters killing forked horns, leaving them where killed and later killing a larger animal. Whether this repeal has had a serious effect on the deer of that section can not be determined until the end of the 1936 season. If it is found that the present law has not worked out satisfactorily, a recommendation will be made for its repeal.

It is interesting to note that in the recent estimate of the U. S. Forest Service of the deer population of the western national forests, that in California there are nine deer per square mile and in all other western national forests the average is only three and one-half deer per square mile. California has in excess of 20 per cent of all the deer of the national forests of the country.

Predatory animal control has been carried on actively on refuge and adjoining areas. Four expert trappers with assistants have been working constantly in the north and three trappers in the south. In addition, four lion hunters have been actively engaged in lion control. Wherever possible these men have been equipped with state owned pickup trucks in order that they may be better able to cover the territory assigned to them. The kill of lions for the two calendar years of 1934 and 1935 was 470, making a grand total of 7460 that have been destroyed since 1907.

Waterfowl conditions from the hunter's point of view have not been satisfactory. It is certain, however, that conditions would have been much worse had it not been for the work done by the Division in providing refuges for the birds in the duck centers of the State. Previous to the establishment of these areas there was practically no place where birds were safe from the opening of the season to its close. Every body of water in the areas frequented by waterfowl was heavily shot over and the birds were constantly disturbed and driven out of the State. It was therefore apparent that areas of safety must be provided

and the Division did just that. There is no doubt in the mind of the writer that at the close of the duck season there were not less than two million birds on our refuges—breeding stock for the next year. Continual work is necessary on waterfowl refuges in order that satisfactory conditions may be provided to take care of the enormous number of birds that crowd in. That the birds are well aware of the boundaries of the protected areas is apparent. When flocks are noted they seem to know when they cross the fence line and quickly settle with their fellows on the open water. California was one of the first states to provide such areas.

GAME FARMS

Production and distribution from our two game farms has been increased very materially in the past two years. The chief factor in this added increase is the further development of the holding pen program. From a small beginning in 1931, when 16 pens were built at Cotati in Sonoma County, this program has developed year by year until at the present time we are serving about 800 of these pens. In 1932 Bakersfield built the second unit of pens in the state. This unit consisted of 20 pens. To show more definitely just what this program means the Bakersfield project will serve as a typical example. Before these pens were built, we were never able to get more than 250 birds liberated in Kern County in any one season. The first season the pens were operated 749 birds were released. The second year saw 1184 birds released and the next season this number was increased to 1876.

These pens are constructed according to plans and specifications furnished by the game farms and paid for by the local sportsmen's organization. A caretaker for the project is also furnished by the local group. The feeding program is carried out under the supervision of the game farms so that the birds after leaving the farms have the same type of feed that they had at the farms. Birds for these groups of holding pens are hatched and brooded at the farms until they are old enough to get along without artificial heat. At that time they are taken by truck or train to the several holding pen units where they are kept until old enough to be released into "closed areas." The average time of this brooding period is about 30 days, and the average time that the birds spend in the holding pen, before being released, is about 40 days. At that time the birds are old enough to make their own way and take care of themselves in the open.

It is not logical to suppose that birds may be reared on our game farms and released for immediate shooting. A program of that sort would not do and would fall of its own weight. Artificially reared birds should be released into "closed areas" where they are protected and allowed to increase according to their own inclinations. When these closed areas are stocked sufficiently, the overflow will provide ample shooting for the hunters in adjoining territory and the supply of game will be uniform each year.

The general program, then, of our game farms is artificially produced birds, reared in holding pens, and released into closed areas for further increase and stocking of the adjoining territory. This program has enabled the game farms to turn out more and better birds at

reduced costs. And while this is important, there is another angle to the program that is of equal or more importance. It has been found that in localities where these pens are located game law violations are decreasing. It seems that where a community has invested its money in holding pens, and taken care of the birds, the idea of state ownership is lost. The birds become community property and are treated as such. Many communities are accepting this responsibility. The presence of the birds seems to help to crystallize public sentiment in their favor and the poacher is gradually finding it harder to get away with his nefarious business.

Near the close of 1935 the Division of Fish and Game launched a WPA building program that has given units of 48 pens to Redding, Willows, Sacramento, Stockton and Fresno. Each of these units of pens has a seasonal capacity of 2000 birds. At the same time the incubating and brooding facilities have been increased to keep up with this holding pen expansion program. As the program develops production facilities will be increased as needed.

The production of our game farms is confined to five major birds: Ringneck, Mongolian and Reeves Pheasants; Valley Quail, Chukor Partridge and some work with the Mexican Bronze Turkey. A careful survey of the conditions of the state warrants this sort of a program. The ringneck pheasant is produced for the agricultural districts; the Mongolian pheasant for the more wooded sections; the Reeves pheasant for the elevations above 2000 feet; the Chukor partridge is adapted to the arid sections of the state. Beginning with the 1937 season, the annual production of Mongolian pheasants will be progressively increased. Most of the available agricultural areas of the state have been well stocked with ringnecks and more attention will now be paid to the wooded foothill areas. The Mexican bronze turkey is finding a suitable home in many sections of the state, where food conditions are almost identical with its native habitat in Old Mexico, New Mexico, Arizona and parts of Colorado.

With the development of a program of this sort the operations of the hunter will be spread out and congestion eliminated and the possible daily bag increased to several types of birds instead of one or two.

In the past two years the production of quail and pheasants has been about equal while the experimental work on the Chukor Partridge has been going ahead. With the planting of 3500 of these birds in about 65 different sections of the State, the results seem to justify our confidence in the bird and we believe this fine game bird will provide the answer to the stocking of the arid sections where at the present time there are no birds of any kind. The open seasons for the past few years have seen the pheasant as a game bird come into high favor among sportsmen. More localities are asking for the planting of this bird.

The following table shows the egg production and general distribution of birds for the biennium:

Eggs Laid					
Ringneck Pheasant	*Silver and Golden*	*Reeves*	*Partridge*	*Quail*	*Turkey*
106,650	176	3,373	12,285	63,245	453

Eggs Distributed

Ringneck Pheasant	*Silver and Golden*	*Reeves*	*Partridge*	*Quail*	*Turkey*
17,429	49	204	94	9,789	—

Birds Distributed

Ringneck Pheasant	*Silver and Golden*	*Reeves*	*Partridge*	*Quail*	*Turkey*
38,661	22	482	2,391	22,867	150

THE QUAIL REFUGE PROGRAM

In 1932 the Division of Fish and Game launched a quail restoration program in southern California based on the premise that through managed natural production the California valley quail could be returned to many of the areas in the southern part of the state where it was once considerably more abundant than it is at the present time.

The first step in the development of this quail management project was the establishment of thirty-six quail refuge areas in the counties of Los Angeles, San Bernardino, Riverside and San Diego. These refuges were then divided into three groups and each group was placed under the dominion of a trained refuge caretaker whose duties included those of warden, trapper and game management expert. Thus the ground work was laid for production of valley quail in those field laboratories—the quail refuges.

In outlining a management plan, the first thing that was considered was, of course, the protection of game from the human element—the man with the gun. This was taken care of by the more than adequate posting of the refuge areas against trespass and, as aforesaid, by the employment of caretakers to prevent violations of the sanctuaries under their supervision. These men have also been responsible for carrying on predatory animal control work on the refuges and have been waging continual warfare against the furred and feathered enemies of game species since the quail replenishment program met its inception four years ago.

The protection of the quail from human and other predators has not been the deciding factor in the success of the quail refuge venture, although it has certainly played its part. Briefly, the answer to the quail problem in southern California has been found to lie in the maintenance of a dependable game water supply during the summer months. Throughout a large part of the desert and semidesert areas of the state most of the water that was once available to wild game has either dried up due to a succession of years of low precipitation, or has been appropriated for other uses by man. Thousands of springs that once provided game with water throughout the year have ceased to flow, and this has spelled game depletion. It was the water problem that had to be solved on the quail refuges in order to bring them to the point at which we find them today, with by far the majority of them supporting quail populations approaching the maximum.

The development of water on the quail refuges was approached from two angles; first, the development of natural water and, second, the supplementing of natural water by entirely artificial means. In the first instance, springs and seepages that ordinarily dried up early in the summer were cleaned out, walled up and provided with drip

pipes in such a manner that they became dependable all-year water sources. In providing entirely artificial watering places, fifty gallon galvanized steel barrels provided with automatically fed drinking troughs have proven very satisfactory. The first of these units was developed and installed by Mr. James Moffit, then in charge of the quail refuge program. Since that time some changes have been made in its mechanics but the system remains the same in principle. Prior to the present year the water barrels have only been used to supplement natural water, the mechanical devices always having been placed where a natural supply has been available within a reasonable distance. However, during the present extremely dry summer of 1936, even the most dependable of natural sources have failed, and on many of the refuges water barrels have been relied on entirely. Without their aid, thousands of quail would have perished of thirst—a heartbreaking conclusion to four years of quail refuge building.

Actually, when we consider the size of the waterless areas of the south, we realize that this business of supplying water to game artificially has been carried on only on a very small scale. It is mentioned here to emphasize the importance of considering water supply when we speak of game management in California. Throughout a large part of our state, we can not speak of one without including the other. The possibilities of a constructive water development program, the results to be measured in terms of game production, are limitless. The quail refuge program has been responsible for demonstrating these possibilities.

The southern California quail problem has, as has been shown above, been a successful project and has been productive of much valuable information, but it has not been the only notable piece of upland game bird work accomplished during the present biennium. In San Mateo County, E. L. Sumner, Jr., then an employee of the Division, completed two years of concentrated study of the life history and habits of the California Valley Quail. The Division has published this year a very complete account of his researches entitled, "A Life History Study of the California Quail, With Recommendations for Conservation and Management." Mr. Sumner's work is considered to be a real contribution to game management literature.

PREDATORY ANIMAL CONTROL

The control of coyotes and bobcats in game refuges and in other regions of game concentration has continued in the usual areas, with additional areas requiring the attention of the trappers from time to time. The killing of deer by coyotes, even in winter, is a local condition. It is apparently not governed by the number of coyotes or deer but by a lack of abundance of the coyotes' normal food supply such as rabbits, squirrels and other small rodents. Such local areas have been found in Lassen and Shasta counties, El Dorado, Placer and Tulare counties.

The four men working in northern California have taken 778 coyotes and 150 bobcats or a total of 928 during the biennium. The animals have been trapped in relatively small concentration areas and on refuges where damage was being done to game and domestic stock. The catch by counties was as follows:

	Coyotes	*Bobcats*
Lassen	410	11
Ventura	97	33
San Benito	72	34
Shasta	64	24
Tulare	31	9
Placer	28	2
Modoc	24	--
Monterey	21	11
El Dorado	14	5
Merced	5	--
San Mateo	4	16
Siskiyou	4	--
Mariposa	3	5
Kern	1	--
	778	150

Sixty thousand miles of trapline were run, the catch averaging one animal to each 64.5 miles of trapline. Seventy-six thousand five hundred and sixty day-sets were made, or 82.5 per animal. The cost of trapping coyotes and bobcats was $11.64 per animal, or in time, 3.14 days. One bobcat was taken for every 400 miles of trapline and one coyote for every 77.11 miles of trapline. Most of the coyotes, except in San Benito County, were taken at elevations between 3000 and 6000 feet. Practically all of the bobcats were caught below the 5000 foot level. In the experience of the trappers the area covered by a resident coyote is considerably smaller than is commonly supposed. It is generally a circuit covered at intervals of several days, covering each day an area of about five square miles. A female coyote, during the whelping time, ranges over a much smaller area.

Eight additional trappers have been put on predatory animal work under the supervision of the experienced trappers who have been employed for several years. To facilitate administration, the State has been divided into five districts with a supervising trapper in charge of each. The districts are as follows:

Northeastern California district from the Sacramento-Truckee Highway north to the Oregon line and west to the Sacramento river and Highway 99.

Northwestern California district from San Francisco Bay north to the Oregon line and east to the Sacramento river and Highway 99.

South Sierra district from Sacramento-Truckee Highway south to Grapevine on Ridge Route and west to San Joaquin river.

South Coast district from San Francisco Bay south to and including Ventura County and east to Grapevine on Ridge Route and San Joaquin river.

Southern California district, all of the southern part of the state from Tehachapi Mountains and Ventura County south to Mexican line.

DEER STUDIES

A study of the Rocky Mountain mule deer of northeastern California has been carried on continuously for the past several years. This study includes actual census work and is furnishing the Division with definite information as to the number, sex ratio, and condition of the deer herd and of disease outbreaks and range conditions. A large portion of the definite knowledge which we have of the mule deer has come as a result of this study.

During the last two years, fifteen count areas on the winter range of the mule deer have been mapped out and counts have been made

three times during the winter months. In this way about 500 square miles or approximately 16 per cent of the winter range of the Rocky Mountain Mule Deer in northeastern California were carefully censused. The average total of the three counts has been 9000 head, the figure on which is based our estimate of nearly 100,000 head of mule deer in the herds of Lassen, Modoc, Siskiyou, Shasta and Plumas counties. This figure we believe is conservative. The sex ratio has averaged one buck with forked horns or better to 6.27 does and fawns. This compares favorably with Dixon's ratio of 5.33 in six counts made in Yosemite and Sequoia National Parks where there is no hunting whatsoever.

The range situation has been particularly bad on the public domain of Lassen and Modoc counties, which has been overstocked with sheep. This area, however, is now being administered by the U. S. Department of Interior, Division of Grazing, and we hope that the tremendous concentration of sheep on small areas will be eliminated. Some of the over-grazed areas are past redemption now, but the rest can, by reasonable range management practices, be saved. In portions of Modoc and Lassen counties, deer have done a considerable amount of damage to their own winter range; this is particularly true in the Blue Mountain area of Modoc County and on the winter range west of Doyle in southern Lassen County. In eastern Butte and Tehama counties between Chico Creek and Battle Creek, the Columbian Black-tailed deer have almost destroyed their winter range in many places. The condition was brought on by over-grazing by sheep and cattle and was of course aggravated by the large number of deer which annually move westward out of the Lassen Park, Upper Battle Creek and Lake Almanor areas. This migration is one of the largest in the state.

Six head of white-tailed deer were seen in the Burney Falls State Park on the shores of the Pacific Gas & Electric Company's reservoir known as Lake Britton. There were four does and two fawns. A buck of this species became entangled in a wire fence near the town of Burney and was released.

SAGE HENS

The sage hen condition in the northeastern sagebrush plateau region is far from being satisfactory. Locally, in Modoc County, they have increased rapidly but in the sheep grazing areas of both counties, particularly in Lassen, they have gone down hill due to the fact that the sheep are brought in over the breeding grounds when the nesting season is in full swing. This condition must be remedied in Lassen County or the sage hen is going to be a thing of the past on range where at one time it was probably more abundant than anywhere else in the State.

ANTELOPE

Antelope have increased and spread to territory in which they have not been seen for many years. It is our belief that no less than 16,000 head regularly range in California and additional ones winter in California and summer in Nevada. Approximately 15,000 head wintered along the eastern side of Refuge 1Q in eastern Lassen County during the winter of 1935-1936. In the summer these animals scatter

in various directions, mostly to the northwest, and are found in small groups in practically all of the valleys in Modoc and Lassen counties. The fawn crop of 1935 was exceptional, but that of 1936 was not quite as good for some reason. Antelope have been studied regularly on two types of areas; one, a block area on which they are counted and studied each month and the other a strip area where counts are made four times a year.

REPORT OF THE BUREAU OF PATROL

By E. L. Macauley, Chief

In July, 1935, patrol activities of this bureau were reorganized and the state divided into three districts. The Coast District includes the counties of Del Norte, Humboldt, Mendocino, Sonoma, Lake, Napa and Marin in the northern division, and the counties of San Francisco, Contra Costa, Alameda, Santa Clara, San Benito, Monterey, San Mateo, Santa Cruz and San Luis Obispo in the southern division. The Central District was divided in two divisions, the northern division including the counties of Siskiyou, Modoc, Trinity, Shasta, Lassen, Tehama, Plumas, Glenn, Butte, Sierra, Nevada, Colusa, Sutter, Yuba, Placer, El Dorado, Yolo, Solano and Sacramento, and the southern division including the counties of Alpine, Amador, San Joaquin, Calaveras, Tuolumne, Mariposa, Merced, Stanislaus, Madera, Fresno, Tulare, Kings and Kern. The Southern District comprising the balance of the State was divided in two divisions, the western division including the counties of Santa Barbara, Ventura, Los Angeles, Orange and San Diego, and the eastern division including Mono, San Bernardino, Riverside, Imperial and Inyo counties.

Each district is in charge of an inspector who has under him two captains, one for each division. It is contemplated that a new grade of sergeant will be established who will work under the captains. A new grade of assistant fish and game warden was created, examinations for which will be open to the general public. After appointment, the assistant warden will serve an apprenticeship in the various bureaus of the division, thoroughly learning the scope of the work, and in all probability will decide the branch of the work for which he is best suited. After a fixed period of service as an assistant warden, promotion can be obtained by taking examinations for the next higher grade, fish and game warden.

Belts, shoulder and lapel insignia have been added to our patrol uniforms, and a new type of service hat specified. Our marine patrol wears navy blue instead of forest green and caps in lieu of hats.

This reorganization of districts and patrol activities has resulted in increased efficiency as indicated in the recapitulation of arrests and convictions which will be found in the appendix on page 74. In addition, the average fine imposed shows a slight increase which may be taken as a measure that times are getting better and that the courts feel larger fines are justified.

During the past biennium the following members of this department retired from active service: Captain C. F. Maddox, Captain S. J. Carpenter; Wardens J. L. Bundock, C. F. England, L. W. Longeway. K. J. Randsell passed away on November 21, 1935.

Two new seagoing patrol boats were constructed in the shipyards of Fellows & Stewart at Wilmington. The *Quinnat III* is a replacement for the old *Quinnat* which served many years on San Francisco Bay

Fig. 3. The New Patrol Boats.

Fig. 4. Fish and Game Patrol Force.

and which has been sold, as its further operation would prove uneconomical. The *Broadbill* is stationed at Newport and an additional vessel is under construction which will also be assigned to Southern California waters. A new Diesel engine has been installed in the launch *Albacore* but within the next few years it will be necessary to replace this vessel, as it has been in service almost twenty years, and we do not believe that extensive repairs will be justified in view of the age of the boat as well as the extremely hard working conditions under which she has operated. Extensive repairs have been made to the motor vessel *Bluefin* which has given very satisfactory service.

The closed cab pickups mentioned in the last biennial report have not worked out as well as expected, and are being replaced as rapidly as the budget will permit with standard passenger cars. While the pickups are very satisfactory for fish planting purposes, and travel well under a heavy load, they do not perform in a satisfactory manner empty. Since fish planting activities have been transferred to the Bureau of Fish Conservation, there is no longer any necessity for cargo-carrying vehicles in this department and it is hoped that the change-over to more suitable cars for patrol work will be completed within the next few months.

Conferences with wardens were held in Sacramento in February, 1935, and in April, 1936, where all of our field men throughout the State met together at one time to exchange their experiences in fish and game law enforcement work. Pistol shoots were held on each occasion at Roseville on the range furnished through the countesy of the Roseville County Council.

REPORT OF THE BUREAU OF COMMERCIAL FISHERIES

By N. B. Scofield, Chief

The commercial fisheries constitute one of the State's major industries, giving employment to 15,000 persons and producing annually products valued in excess of $30,000,000. In each of the years 1934 and 1935 the landings of fish and shellfish in California by California fishermen exceeded the billion-pound mark for the first time in the history of the State. In each of these years the total amount of fish landed and the value of the fishery products exceeded that of Alaska or any one of the states. According to the U. S. Bureau of Fisheries reports, the total value of canned fishery products and byproducts in the United States and Alaska in 1935 was $104,480,000. The three western states and Alaska accounted for 71 per cent of this total. California, with her important tuna, sardine and mackerel canning industry, was first in value of canned fishery products and byproducts, amounting to $35,797,000, or 34 per cent of the total. Alaska was second with 27 per cent of the total value. This would leave 10 per cent of the total value to be divided between Oregon and Washington.

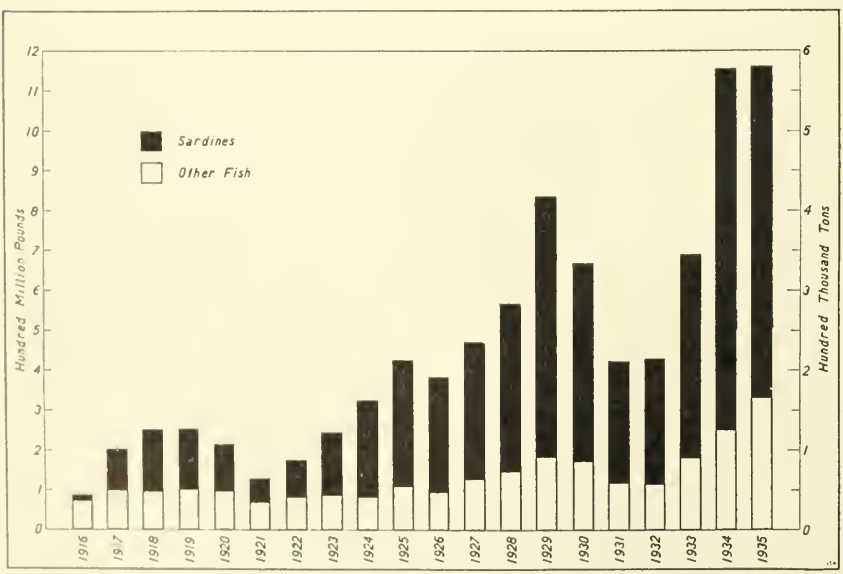

Fig. 5. Total landings of fish (exclusive of mollusks and crustaceans) in California. Importations from Japan and Hawaii have been omitted. Catches south of the International boundary have been included. "Other fish" consists of the combined species of fish except sardines. The top of the black bar represents the total of our so-called local catch.

As has been stated in former reports, the production of the fisheries as a whole follows very closely the prosperity curve. When the

country is prosperous the fishery production rises, and when a depression comes the fisheries drop to a lower level. In our last report we pointed out the rising production of the fisheries during the years 1932 and 1933 after the low year of 1931. The tremendous increase in the production of the fisheries during 1934 and 1935 (See Fig. 5) can not all be credited to returning prosperity, however, for we cer-

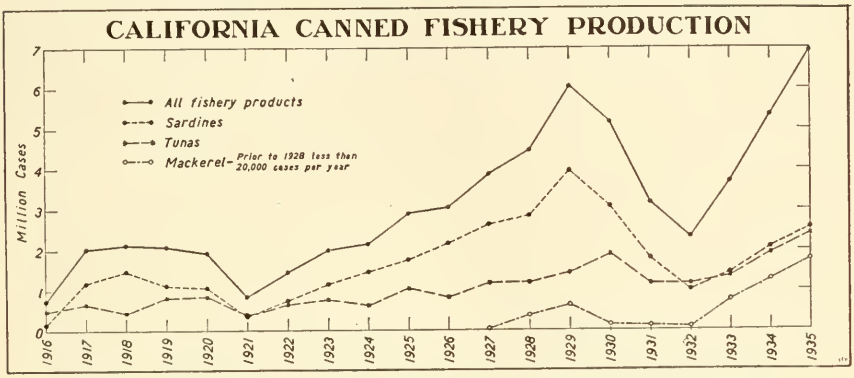

Fig. 6. California canned fishery production, 1916 to 1935, inclusive.

tainly were not as prosperous during the past two years as we were in 1928 or 1929, although the fisheries produced two hundred million pounds more fish in either of the past two years than in the former record year of 1929. There are two main causes for the increase. One is the virtual removal, by the Division, of restrictions against the use of sardines for the manufacture of oil and meal; and the other is the strong domestic market for canned fish, which is, no doubt, being used in part as a substitute for more expensive meats. The increased demand for fish as a food is not a temporary thing but bids fair to be permanent.

Although this report is for the biennial period extending from July 1, 1934, to June 30, 1936, we have been accustomed to compiling the commercial fish catch and fish pack by calendar years. The sardine season fits best into the fiscal year; therefore, besides compiling the sardine statistics by calendar years along with the rest of the fisheries, we also treat them in a special seasonal report. This procedure is followed in this report and care should be used not to confuse sardine figures given for calendar years with those for seasons. The detailed record of the fish catch and fish pack for the calendar years of 1934 and 1935 and the special sardine report for the seasons 1934–1935 and 1935–1936 may be found in the appendix to this report, or in statistical Circular No. 9, issued in May, 1935, and Circular No. 10 issued in May, 1936.

In 1934, the total landings of fish and shellfish in California by California fishermen amounted to 1,167,419,462 pounds. In 1935, the total landings were 1,172,539,562 pounds. The combined landings for the two years amounted to 2,339,959,024 pounds as compared with landings of 1,140,668,653 pounds for the two years 1932 and 1933, or an increase of 105 per cent.

In 1934, the fisheries produced 5,324,084 cases of canned products, and 6,922,025 cases in 1935, making a total of 12,246,109 cases for the two-year period, as compared with 6,021,345 cases for the previous two-year period, or an increase of over 100 per cent.

Fish meal produced in 1934 from sardines and other fish amounted to 77,724 tons. In 1935 this product amounted to 78,695 tons.

Fish oil produced from sardines and other fish in 1934 amounted to 16,128,208 gallons. In 1935 the oil produced was 13,924,138 gallons. The fish meal and oil produced during the two years covered by this report was considerably more than double that produced during the previous two years. These records do not include the production of the floating sardine reduction plants operating just outside the three-mile limit to escape the conservation regulations of the State. A report of their operations is given elsewhere.

The value of the canned, cured and manufactured fishery products for 1934, not including fish sold fresh in the markets or the floating sardine plant products, was $24,847,256 and 6,570 persons were employed in the shore packing plants. In 1935 the value of these same products was $30,920,240, and 8,168 persons were employed in the shore packing plants.

Market fishermen's licenses issued in the license year 1934–1935 (April 1 to March 31) totaled 5323, while for the license year 1935–1936, 6007 licenses were issued.

SARDINES

The sardine fishery continues to be the largest in the State. By referring to Fig. 5 it will be seen that the sardine catch overshadows that of all other species combined and accounts for most of the gain in the total take of fish in the past several years. During the past 20 years the annual sardine catch, including that of the floating plants, has doubled, on the average, each 4 or 5 years. The amount of sardines delivered to shore and floating plants on the California coast during the past two sardine seasons was 608,936 and 565,920 tons, respectively.

Sardine Season 1934–35 (Shore Plants)

Amount of catch, 961,492,000 lbs.	Increase over previous season	53%
Pack of pound oval cans, 1,486,343 cases	Decline from previous season less than	1%
Pack of other size cans, 381,929 cases	Decline from previous season	15%
Sardine meal, 77,651 tons	Increase over previous season	64%
Sardine oil, 16,870,565 gallons	Increase over previous season	82%

Sardine Season 1935–36 (Shore Plants)

Amount of catch, 811,332,000 lbs.	Decline from previous season	15%
Pack of pound oval cans, 1,936,154 cases	Increase over previous season	30%
Pack of other size cans, 1,205,312 cases	Increase over previous season	215%
Sardine meal, 59,901 tons	Decline from previous season	29%
Sardine oil, 13,200,692 gallons	Decline from previous season	28%

In the above tables, giving the sardine catch and production of shore plants for the past two seasons, there are several things which deserve comment. The great increase in the catch and in the yield of sardine oil and meal in the season 1934–1935 was the result of very liberal reduction permits granted to reduction plants by the Division

of Fish and Game. The price of oil was good and the reduction operations were quite profitable. Under the law canners may take sardines without limit provided they produce the equivalent of 13½ cases of pound oval cans from each ton of fish, but it is unlawful to use sardines for reduction except under permit. The law limits the amount of the permits to what will not tend to deplete the species. Permits were issued for the season 1934–1935 to aid the sardine canners to tide over the depression in the sardine canning industry and to give employment to fishermen, many of whom were in dire want. Our recommendation was that reduction permits be issued in amount not to exceed 5000 tons for each plant for the season. Under the circumstances it seemed proper to issue liberal permits, even if it resulted in a serious strain on the sardine supply. Permits were issued from time to time during the season until at the end of the season most of the plants had received 12,000 tons, an amount far in excess of what the commissioners had expected to give earlier in the season. These liberal permits not only gave relief to canners and fishermen but stimulated still further the expansion of an industry already over-capitalized. More reduction plants were built to be in readiness for the next season. During the season additional fishing boats were added to the fleets and the number of fishermen was increased by several hundred, many of them coming in with boats purchased or chartered outside the State. Canning was neglected except by a few of the wiser canners, resulting in a pack which was slightly less than in the previous poor season, although there was a brisk demand for canned sardines toward the end of the season.

For the season 1935–1936 reduction permits were issued but they were for less than half the amount given each plant during the previous season. There was a number of additional plants which got permits but the total tonnage of the permits granted was considerably less than for the season before. This resulted in a decline of 15 per cent in the total catch of sardines as compared with the season before, notwithstanding quite an increased tonnage was taken for canning. The market for canned sardines was strong throughout the season and resulted in a greatly increased pack. Most of the increase was for other sizes than pound oval cans.

The total pack of over three million cases was mostly sold in this country instead of 80 per cent of it going to foreign countries as was the case a few years ago. This change has been aided by the increased demand for all kinds of canned fish in the United States. It looks now as though the California sardine canners have at last gained the domestic market for their product, a thing which they have desired for many years. With this prospect of a good domestic market for canned sardines, canners are beginning to fear that excessive use of sardines for reduction purposes will deplete the supply of fish to such an extent that the canning industry, with its large investments in plants and boats, will be jeopardized.

In our last biennial report we commented on what we considered the enormous sardine catch for the season 1933–1934, which was, for shore and floating plants, a little over 190,000 tons. The amount of sardines delivered to shore and floating plants the past two seasons has greatly exceeded that huge amount, the shore and floating plants on

the California coast taking 608,936 tons in the 1934–1935 season and 565,920 tons in the season of 1935–1936.

Even if there were no evidences of depletion disclosed by the research of the State Fisheries Laboratory, it must be evident to any who are interested in guarding this valuable State resource from over-exploitation that this expansion should be halted. When the maximum safe production of the fishery is passed, if it has not already passed that limit, the ensuing collapse of the fishery means disaster to fishermen and plant owners and to their huge investment in boats and plant equipment.

A few comparisons will aid in appreciating the great strain which is being exerted on this natural resource. The California sardine catch in either of the past two seasons was much greater than the seasonal or annual catch of any species of fish has ever been in North America. Alaska is famous for its great fisheries, but the sardine catch alone of California now exceeds the catch of all species of fish and shellfish in Alaska. How long will our sardine fishery stand this strain? On our Atlantic coast where the wide continental shelf is capable of supporting a larger fish population that the very narrow continental shelf of our Pacific coast, the menhaden fishery, which is in many ways comparable to our sardine fishery, reached its limit of production at 407,000 tons in the year 1922. Thereafter the menhaden fishery, in the face of better prices for meal and oil and with more economical fishing and manufacturing methods, has declined to less than one-half its maximum production of 15 years ago.

The mackerel of the Atlantic coast, which also is a schooling, pelagic fish, like the sardine, has had a similar history. Its maximum production by American vessels was in 1884 when 65,000 tons were taken. In 1885 the catch dropped to 45,000 tons and since that year has not exceeded 25,000 tons. This also appears to be a fishery which has been over-exploited.

Those who prefer to believe that our sardine fishery is not in danger point to the sardine fishery of Japan which produced in 1934, the last figures available, 1,617,535 tons. In making this comparison, a number of things should be taken into account. The Japanese fishery has only recently been exploited to such an extent, and there is no assurance that their resource can stand this heavy fishing for long. In California the fishery depends on one species of fish, while in Japan there are five species of fish included in the figures for the sardine fishery. They are a true sardine, three species of herringlike fishes and one species of anchovy.

In comparing the yield of the California sardine fishery with that of Japan the fishing areas of the two countries which are suitable to maintain sardine populations should be compared. The world's larger fisheries are confined to relatively shallow water for it is only in such waters that fish can find an adequate food supply. For practical purposes the fishing area can be considered to lie within the 100-fathom line. The area within the 100-fathom line in Japanese waters is 443,000 square statute miles. The area within the 100-fathom line along the Pacific coast of the United States and British Columbia is 33,000 square statute miles, whereas the 100-fathom area along the coast of California alone is only 14,000 square miles. If we compare the amount of sardines

taken per square mile of area suitable for sardines in the two countries we find that the catch in California is much greater than that of Japan. If a like comparison is made with the great herring fisheries of the North Sea or with the menhaden or mackerel fisheries of the Atlantic coast of the United States, it is found that the California sardine is being fished far more intensively.

Many fisheries have been depleted by far less intensive fishing than we are giving the California sardine and we are justified in stating that the situation is critical and that the sardine resource of California is in grave danger from an industry which is still expanding at a terrific rate and over which the Division of Fish and Game has not been given adequate control.

Floating Reduction Plants

During the sardine season of 1934–1935 three floating reduction ships operated on the California coast just outside the jurisdiction of the state. These ships were supplied with sardines mostly by California fishermen who used the state harbors, and the ships delivered their products to California ports. From the products landed an estimate, which is quite accurate, has been made of the amount of sardines delivered to each plant. During the season the *Lake Miraflores* received approximately 56,646 tons of sardines and produced 9441 tons of meal and 1,936,533 gallons of oil. The *Lansing* received about 62,862 tons of sardines and produced 10,477 tons of meal and 2,201,333 gallons of oil. The *Santa Inez* received approximately 8682 tons of sardines and produced 988 tons of meal and 226,667 gallons of oil. The three plants took for the season a total of approximately 128,190 tons of sardines.

During the sardine season of 1935–1936, in addition to the three plants mentioned, a fourth plant, the *Brookdale*, operated. During this season the *Lake Miraflores* took approximately 55,638 tons of sardines and produced 9273 tons of meal and 2,253,018 gallons of oil. The *Lansing* received about 72,714 tons of sardines and produced 12,119 tons of meal and 2,665,664 gallons of oil. The *Santa Inez* received about 22,926 tons of sardines and produced 3820 tons of meal and 992,798 gallons of oil. The *Brookdale* received about 7476 tons of sardines and produced 1246 tons of meal and 185,066 gallons of oil. The four plants took during the season approximately 158,754 tons of sardines.

Conservation of Sardines

Although the take of sardines by floating reduction plants is as yet considerably less than that of the shore plants, their operation is a distinct menace to the entire industry.

Almost 20 years ago when the sardine industry was just getting started, it was recognized by the State and by sardine canners that the sardine supply had a limit and should be guarded against exploitation for reduction purposes and conserved for the higher use as human food. Laws were passed to carry out this policy and many decisions in our state courts recognize the justice and wisdom of curtailing the use of these fish in reduction plants.

There has been a 20-year fight in our legislature to prevent the reductionists from destroying this supply of food fish for a few years of quick profit. Then about six years ago was developed the floating

reduction plant, designed expressly to evade the State's laws, by operating without any restriction just outside the State's jurisdiction, where they take the fish from the same supply as the shore plants. They use the State's harbor facilities for landing their products and for refuge. The fishermen employed by them use our harbors to which they return after each night's fishing. It is even impossible to prevent them from making their catches inside the state waters.

Recognizing the injustice of the laws which prohibited the plants which operated under state jurisdiction from taking sardines for reduction purposes, while the floating reduction plants could operate without limit on sardines taken from the same schools on which the shore plants depended, the legislature gave the Division of Fish and Game authority to permit shore plants to take sardines for reduction.

This was not a solution of the problem for, if unlimited permits are given to shore plants to take sardines for reduction, it is quite evident the sardine supply will be soon exhausted. On the other hand, to limit the reduction operations of shore plants in an attempt to save the sardine supply from eventual destruction simply increases the number of floating plants and the rapid expansion of the reduction industry is not stopped. These offshore floating plants are now rapidly increasing in numbers and capacity. More fishermen are engaging in the business; more and larger boats are being added to the fishing fleet, thus still further expanding a fishery already greatly over-capitalized. In other words, there is no adequate control over this great industry and a very valuable state resource is headed for destruction.

It is obvious that the only solution to the problem is to bring the floating plants under the same rules and regulations as the shore plants. The better way to bring this about would be for the state, through legislation, to control sardine fishermen and sardine fishing boats which must make use of state waters and harbors; but so far attempts to get such legislation have been defeated by the floating plant interests. An attempt to get similar legislation in the last congress was defeated by the same interests.

MACKEREL

Mackerel canning began in California 20 years ago but the industry was unimportant prior to the year 1928. (See Fig. 6.) The efforts of canners to build up a market for canned mackerel were finally rewarded and 387,000 cases were disposed of in 1928. In 1929, the year before the financial depression, the mackerel pack was 611,000 cases. The amount of mackerel used that year for canning and in the fresh fish markets was about 60,000,000 pounds. For three years thereafter, during the first part of the depression, the take of mackerel was quite small again. The year 1933 saw a sudden revival of the industry, with a catch of almost 70,000,000 pounds, exceeding the peak year of 1929 by 10,000,000 pounds. The size of this catch is better appreciated when compared with the mackerel catch on the Atlantic coast of the United States which has not equaled 50,000,000 pounds in over 20 years.

To meet the canned mackerel demand, practically all of the southern California, and part of the Monterey, fish canners took up mackerel canning in earnest. Very little change was necessary to equip the large tuna and sardine canneries for handling mackerel as a side line. The

large fleet of sardine fishing boats was prepared to fish mackerel without alteration of fishing gear. The mackerel season fits very well into the closed season for sardines. These are the reasons why it has been possible to so quickly develop a major fishery in an attempt to satisfy the demand for canned mackerel. The result of all this was a total take of mackerel in 1934 of 113,785,000 pounds and a take of 146,427,000 pounds in 1935.

California's mackerel fishery is remarkable both for its size and the rapidity of its development. In size its yield is now three times that of the Atlantic coast of the United States. It is considerably larger than the mackerel fishery of England, Scotland and Ireland or of France. It is exceeded only slightly by that of Japan. We are naturally afraid that this very large catch is more than the California mackerel supply can stand without serious depletion.

An intensive study of this fishery was begun a few years ago when it became evident the supply of fish was to be more heavily drawn upon. The main features of the mackerel's life history have been learned but the time which has elapsed since the fishery was subjected to a heavy strain has been too short to give us the desired information as to how much the fishery can stand. It would seem wise, however, for the legislature to give the Fish and Game Commission power to regulate or limit the catch, in order that a reasonable annual catch can be tried out and thus determine what the maximum production of the fishery should be without depletion of the supply.

OYSTERS

Over 60 years ago enterprising citizens of California started an oyster-growing industry in the state by shipping oyster seed from the Atlantic coast. The young oysters grew rapidly in San Francisco and Tomales bays and the industry centered in these two bays became profitable. The summer temperatures of the water in California were too low to permit the oysters to spawn successfully, so the supply was kept up by annual importations of seed. All went well until about 20 years ago when gradually the oyster seed failed to grow properly and the older oysters became thin and watery as though their food supply was failing them. The exact cause of this decline was not determined as the industry lacked a technically trained adviser, so the growing of Eastern oysters was gradually abandoned. In the meantime great strides were being made on Puget Sound in growing oysters, both the small native species, now known to the trade as the Olympia oyster, and the imported Japanese oyster which has been given the trade name of Pacific oyster. The success of the industry in Puget Sound was mainly due to the employment of trained biologists.

Encouraged by the success of oyster growers on Puget Sound, we decided that, as we have the same native Olympia oyster as well as the Japanese species, and fairly large areas suitable for growing them, a similar industry could be built up in California. We therefore secured the cooperation of the U. S. Bureau of Fisheries who detailed one of their oystermen, H. C. McMillin, to California. We furnished a trained biologist, Paul Bonnot, to act as his assistant. Surveys of all the state tide lands suitable for oysters were made. As a result of this survey new oyster laws were drafted and passed by the legislature to take the

place of the antiquated laws passed in the early 1870's. The new laws provide that state tide lands may be filed upon for oyster cultivation under the administration of the Division of Fish and Game and it is provided that at the discretion of the Division a small revenue shall be paid to cover the cost of administration and the services of an aquatic biologist.

Under the encouragement given, a serious start was made in growing the native oyster in Humboldt Bay and the Japanese oyster in Drake's Bay and Elkhorn Slough. Humboldt Bay was selected as the most favorable locality to develop native oyster growing and the Division, under the authority of the new laws, prohibited the introduction of Japanese or other exotic species in the bay. This was done to guard against the appearance of certain destructive pests, especially the Japanese oyster drill, and to prevent the possible crowding out of the native oyster by a less valuable species.

Fairly large plants of Japanese oysters have been made in Elkhorn Slough on Monterey Bay, San Francisco Bay, Drake's Bay and Tomales Bay. These oysters grow rapidly and it is now certain they can be grown successfully in various localities in the State. This oyster is excellent for canning and for use fresh or frozen, but at the present time the market is not very good and there are more than enough being raised to supply the demand. In addition to this the U. S. markets are being invaded by frozen oysters from Japan at a price so low our growers can hardly compete.

On the other hand, the small native or Olympia oyster has little or no competition. The demand for it is growing and the price advancing. If this oyster can be grown successfully on a commercial scale in Humboldt Bay it will be so much more valuable than either the Japanese or Eastern oyster as to justify all possible assistance and encouragement. This is being rendered by the services of Mr. Bonnot, aquatic biologist, who has continued the work since the withdrawal of the U. S. Bureau two years ago. Humboldt County has given financial aid to the industry and has built for the use of Mr. Bonnot a small but adequate laboratory on the shore of the bay.

For four years several companies have been carrying on and have spent a good deal of money in building dikes and preparing beds. For three years they have put out great numbers of the latest model of oyster collectors. The first year they failed to get a good set, due partly to their lack of experience. Last year they were thoroughly prepared but the water was abnormally cold all season and the oysters failed to make a commercial set. This, with other troubles, was naturally quite discouraging. From experiments it was indicated that Eastern oysters can be successfully grown in the bay from the imported seed, when protected by dikes. To bring in a revenue to the growers while trying to get the native oyster on a paying basis, the Division removed the ban against planting Eastern seed in the bay. Last year a carload of seed was brought out and is now doing wonderfully well.

During the present season the native oyster has made a remarkably good set and the two companies which put out collectors were rewarded with a crop of young oysters that would be considered good on the best of the Olympia beds. Notwithstanding the large importations of Eastern oyster seed which will be planted this fall, it now

seems assured that the growing of native oysters is to be made a commercial success in Humboldt Bay.

SALMON

California's salmon fishery, the oldest and once the most important fishery in the state, continues to decline and it is inevitable that our two species of salmon, the king and silver, will become commercially extinct in California unless more protection is given them. The run of king salmon which ascends the Sacramento and San Joaquin rivers to spawn has been fished harder and over a greater period of years than any of the other runs in the State and it is this run which is in the most serious stages of depletion. This run of salmon has been reduced to a mere vestige of what it was even 20 years ago. The salmon of this run are, most of them, being caught by commercial trollers in the open ocean from Point Reyes to Monterey before they enter San Francisco Bay on their way up the rivers to spawn. River fishermen also take their toll but their seasons have been cut down until they catch only a small number as compared with the outside trollers. Facts relating to the depletion of this once great salmon run as well as what should be done about it are well known.

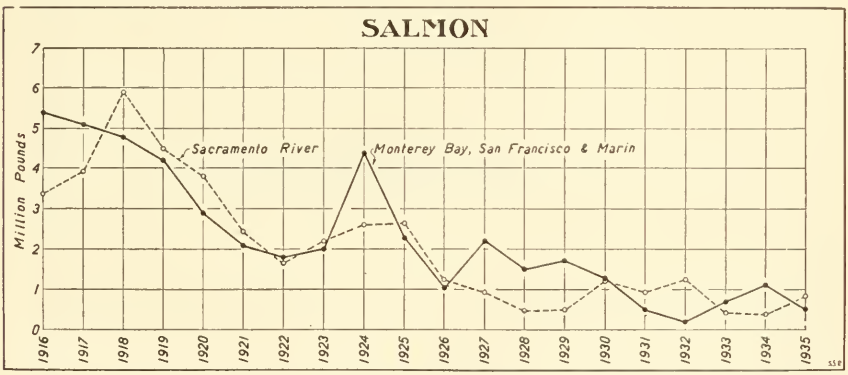

FIG. 7. Sacramento River salmon catch contrasted with the ocean troll catch landed at Monterey Bay points, at San Francisco and at points in Marin County, from the year 1916 to the year 1935.

We have for many years been pointing out the seriousness of the situation and measures to restrict the intensity of the fishing have been presented to the legislature by the fish and game commissioners, but the measures enacted into law have always been inadequate compromises. Closed seasons, especially for the outside trolling, have not been long enough and such closed seasons as we were able to get have subsequently been shortened. The river fishermen realize that the salmon are depleted, and have voluntarily agreed to greatly shortened seasons which they have not attempted to get extended. The ocean trollers, on the other hand, would sacrifice the salmon for a few years of quick profit.

The depletion of the Sacramento salmon is so obvious that it does not require a complicated statistical analysis to prove it. No one who examines the facts and is interested in conserving our fishery resources

can doubt the seriousness of the depletion, and all will agree that something should be done about it.

The decline in the total catch over a long period, both in the ocean and in the river, as shown in the graphs in Fig. 8 is unmistakable

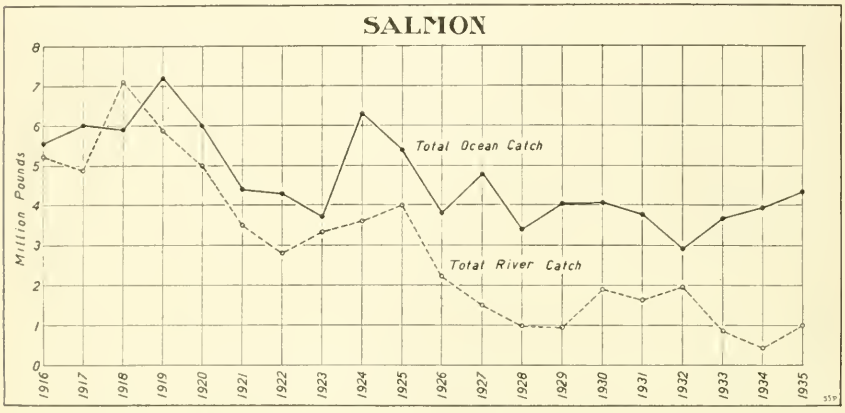

FIG. 8. Showing the decline in the total river and ocean salmon catch in California since 1916.

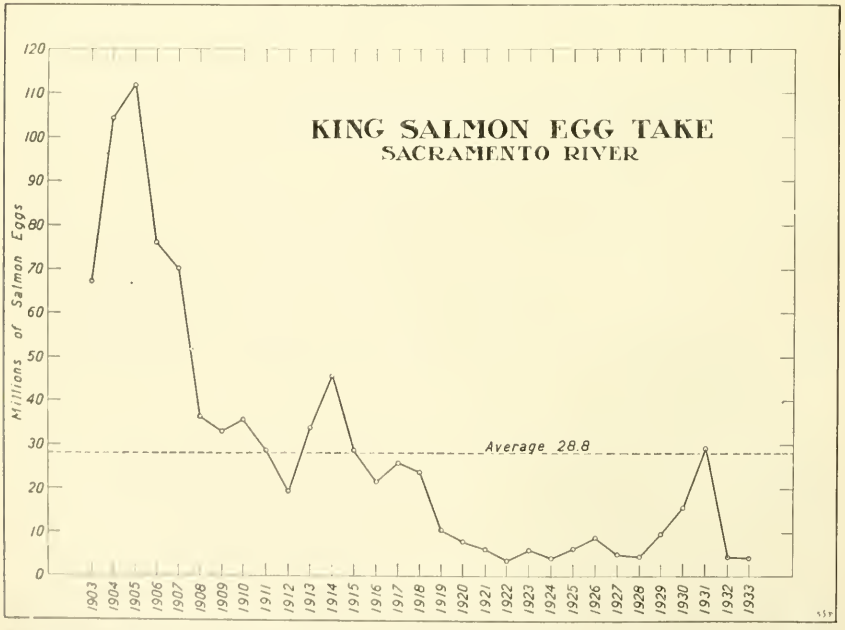

FIG. 9. Record of the King Salmon egg take on the Sacramento River at the three stations, Baird, Battle Creek and Mill Creek.

evidence that depletion has been going on for a long time and that the supply of salmon is approaching the vanishing point. It can not be argued that this reduction in the catch is due to restrictions imposed on fishermen, for the number of salmon which escape the fishermen and

get up the river to spawn has been declining even more rapidly than the catch. The decline in the take of eggs at the three spawn-taking stations of the U. S. Bureau of Fisheries on the Sacramento is proof that the number of salmon which escape up the river has been reduced to a small fraction of that of only a few years ago. The salmon hatcheries on the Sacramento are unable to get enough eggs to warrant their operation. This lack of eggs and the inability of the State to give the salmon protection sufficient to give them a supply of eggs for the hatcheries has caused the U. S. Bureau to seriously consider abandoning its salmon culture operations on the river.

What is needed is shorter trolling seasons in the ocean districts, and the closed seasons should be imposed with the object of reducing the catch of salmon, especially during the time they are migrating up the coast and entering the river to spawn.

The Sacramento River season closes on September 17th, at which time the larger fall run is at its height, thus permitting approximately one-third of those entering the bay to pass up the river during the closed time.

We have attempted to get a closed season in the Monterey Bay ocean districts and in the district off San Francisco so as to protect a substantial part of this same fall run as it passes up the coast, first through Monterey Bay and later through the district outside the Golden Gate. The object is to give protection to the latter part of this run, first in Monterey Bay, next in the district north of Santa Cruz and off San Francisco and last in the lower river districts. To do this the season must close early enough in each district to give real protection. The seasons we have now do not give this protection except in the river districts and too large a portion of the run is caught before the salmon can get in the river. What is needed is an earlier closing of the outside seasons.

REPORT OF THE CALIFORNIA STATE FISHERIES LABORATORY

By W. L. Scofield

The Bureau of Commercial Fisheries is applying conservation practice to our fisheries in an attempt to harvest the largest possible annual crop consistent with sustained yield, and the research program is designed to supply the information necessary before such a policy can be carried out. The research work has as its goal the determination, for each of our more important fisheries, the point at which overutilization occurs so that a maximum continuous yield may be established for each fishery. Management of a fishery toward this end usually involves regulation and the research program includes the supplying of information to serve in judging the kind of regulation that will be effective. This necessitates examining the efficiency of the legal restrictions already established. The research work for each fishery is therefore designed to learn the life history and habits of the species as a background for regulation, but the important consideration is a study of possible changes in supply of fish and the causes of such variations.

The greatest yield of our fisheries in both volume and value is from those schooling species which may be caught in quantity and readily preserved by canning. Consequently, our three major research projects include the three groups of fishes caught in greatest amounts and in most danger of over-utilization—sardines, mackerel and the tunas. Our study of the flatfishes of northern and central California is our only major project dealing with a fishery supplying fresh fish markets. In addition to these four major investigations, a number of comparatively minor studies have been completed during the biennium.

To avoid confusion in such a varied program and to systematize its operation, each of certain major projects has been assigned to one staff member to assume responsibility for carrying out the details as planned. In most of the planning, a system of conferences has been followed so that each staff member feels a part of and contributes toward the program as a whole. The major assignments among staff members are as follows:

Sardines—Frances N. Clark.
Mackerel—Donald H. Fry, Jr.
Tuna—H. C. Godsil.
Flatfishes—G. H. Clark.
Compilation of Statistics—Geraldine Conner.
Sport Catch Records—Richard S. Croker.

Before discussing the research projects separately, we wish to point out two important developments that characterize the past biennium. Both result from the appreciative and encouraging attitude of our Commissioners and Executive Officer. The most important is a noteworthy widening of the application of statistics to fish and game management and the second is a general enlargement of our fisheries research program, especially the initiation of fish tagging experiments.

Sardines.

First consideration in our research program has been given to sardines because the volume of the sardine catch in California is more than double the landings of all other species of fish and shellfish combined. The study of this fishery has proven to be the most difficult of our research projects but during the last two or three years the results of our previous work have been clarified with the addition of more information so that now we have a fair working knowledge of this baffling fishery. We have learned the distribution and relative density of the supply, the sizes available, the size composition of the catch, spawning habits, spawning areas, intensity of spawning in various areas, approximate growth rate, size at maturity, migrations, relative measure of natural fluctuations in supply, and roughly a gauge of the effects of man's fishing upon the available supply. We need to perfect our measures of abundance and extend our knowledge of local spawning and nursery grounds, especially in Lower California and along the coast northward from Monterey Bay. We also need to know in greater detail the growth rate of the young fish and should continue to measure the relative strength of each new age class before and after it enters the commercial catch.

An outstanding feature of the recent sardine work is the tagging of fish in an attempt to substantiate our previous determination of migrations. As individual fish are not handled in the reduction plants, we have used an internal tag inserted in the body cavity of the sardine and recovered by electromagnets from the fish meal. This work was started in 1935 and results from it are not yet available.

Mackerel.

The mackerel fishery is our newest large scale industry and our research plans for this species were put into operation a few months after the sudden rise to prominence of mackerel canning. Already we have a satisfactory knowledge of the distribution of the species, the spawning habits, identity of eggs and larvae, proportion of sizes in the commercial catch at San Pedro, size at maturity, age, and rate of growth. We have partial knowledge of the spawning localities with the intensity of spawning in each, but little is yet known of the movements of larvae, young fish or the migrations of the adults. Work with the larvae and young fish is gradually supplying this information and a tagging program has been instituted to determine the volume and extent of adult migrations. A depletion study involving a statistical analysis of individual boat catches is not yet feasible in this new and rapidly changing fishery, but a study of the composition of the commercial catch has suggested a possible criterion for judging relative abundance of supply from year to year.

Tuna.

The tuna fishery is third in volume and second in value among the fisheries industries of the State. At least five different species are involved and the area fished extends from Monterey Bay to below the equator, which offers the possibility of several spawning localities throughout this wide extent with possible local races complicating the problem. As nearly all the tuna fishing is conducted far distant from state waters, a study of this fishery offers difficulties, and we have felt the lack of a research vessel specially assigned to tuna investigations. In spite of the difficulties inherent in this problem, progress has been made in the study of this fishery. As yet the work has necessarily been of a preliminary nature with the gathering of data for future use. A preliminary study was made of the losses of fish due to faulty refrigeration. Catch composition sampling has been initiated, data for growth studies collected, racial studies started, and preliminary spawning data gathered. Scouting trips have been made with two of the patrol boats to locate schools of tuna, specially albacore, for our own information and as an aid to commercial fishermen.

One of the two outstanding accomplishments to date has been the introduction of a system of ships' logs voluntarily kept by boat captains to give us definite records of fishing localities, bait hauls and fishing effort expended in making the catches. A program of tagging the three most important species has also been started to give us knowledge of migrations and to serve as a basis for the solution of some of the other problems of this fishery.

Flatfish.

Our earliest large commercial fishery industry and still our most important fresh market fishery is the trawling for flatfishes in central and northern California. The research work in this fishery has been the gathering of data for life history studies of the several species of fishes making up the commercial catch. Considerable progress has been made in determining the size groups of each species and the species composition of the catch. Data have been collected toward determining growth rate, size at maturity and spawning characteristics for each species. The outstanding accomplishment so far has been the persuasion of the fishermen to adopt larger meshed savings gear, thereby reducing the wastage of young fish. Experimental hauls are now being made with other types of trawl nets and of various sizes of mesh to determine for the industry the most efficient gear. A less spectacular but equally important accomplishment has been the introduction of detailed fishing logs on the boats and a recording of the yield from numbered block areas of the ocean. This is a basis for depletion studies which have been started.

Minor Research Projects.

Minor research studies range from a special report, which may require only a week or two in preparation, to investigations extending over two or three years, but as contrasted with the major portions of our program they are relatively of short duration and temporary importance. For example, several reports have been made on the fish or clam resources of limited areas for use in the state legislature, and others have covered the character of the commercial catch of some species. Two more extensive minor studies are the experiments in the tagging of striped bass in the San Francisco Bay and river area to determine migrations, and the annual census of the population of clams at Pismo Beach to measure the rate of depletion and the possible beneficial effects of the area closed to clam digging.

Boat Trips.

In the absence of a special research vessel, the ocean work has been carried on by an arrangement for part time use of the two patrol boats, *Bluefin* and *Albacore*, supplemented by trips on board vessels of the commercial fishing fleet. The nature of our work during the last two years has called for an increasing amount of time spent at sea by staff members. The longer voyages of two to six weeks have usually been made by the *Bluefin*, and many of the shorter trips of two to twenty days have been made aboard the *Albacore*. During the biennium, 37 important research trips were made, 21 by the *Bluefin* and 16 by the *Albacore*. On four occasions, one-day trips employed the patrol boat *Broadbill*. H. C. Godsil made three long tuna tagging voyages into southern waters aboard one of the tuna vessels of the commercial fleet, and other staff members have made numerous one- and two-day trips with commercial fishermen.

Publications.

The results of the research work are reported and in most cases published for distribution. The more comprehensive reports are issued

in the series called "Fish Bulletins," and less extensive articles are printed in the quarterly magazine, "California Fish and Game." Popular accounts of the results are frequently published in trade journals or in the Department of Natural Resources monthly magazine, "California Conservationist," and occasionally in eastern or foreign biological journals. Results of special interest to a portion of the fish trades are sometimes mimeographed for distribution, but more frequently special reports are intended primarily for the administrative officers of the Division and are submitted in typewritten form.

During the biennium, the following six Fish Bulletins were issued:

No. 41. Early life-history of the California sardine (*Sardina caerulea*), with special reference to distribution of eggs and larvae. By Eugene C. Scofield.

No. 42. Maturity of the California sardine (*Sardina caerulea*), determined by ova diameter measurements. By Frances N. Clark.

No. 43. The sizes of California sardines caught by the different fishing gear and in the different localities of the Monterey and San Pedro regions. By the California State Fisheries Laboratory.

No. 44. The commercial fish catch of California for the years 1930–1934, inclusive. By the Staff of the Bureau of Commercial Fisheries.

No. 45. The sharks and rays of California. By Lionel A. Walford.

No. 46. A contribution toward the life histories of two California shrimps, *Crago franciscorum* (*Stimpson*) and *Crago nigricauda* (*Stimpson*). By Hugh R. Israel.

Fourteen articles dealing with fisheries problems were prepared by staff members for the magazine, "California Fish and Game," as listed below:

Forecast for the 1935–1936 sardine season.

CLARK, FRANCES N.

A summary of the life-history of the California sardine and its influence on the fishery.

CLARK, G. H.

The California trawl fishery and its conservation.
San Francisco trawl fishery.

CROKER, RICHARD S.

Sardine canning in California.
Smoked, salted and dried sea-foods of California.
What is the world's greatest fishing port?

FRY, DONALD H., JR.

A description of the eggs and larvae of the Pacific mackerel (*Pneumatophorus diego*).
A preliminary summary of the life history of the Pacific mackerel (*Pneumatophorus diego*).
Mackerel: Can the fishery continue?

PHILLIPS, J. B.

The crab fishery of California.
Experiment to determine the feasibility of the use of trammel nets in Monterey Bay.

SCOFIELD, W. L.

The harvesting of giant kelp in California.

TIBBY, RICHARD B.

The construction of the purse seine as used in the San Pedro Sardine fishery, 1935–1936 season.

The following were published or presented for publication in other periodicals:

CLARK, FRANCES N.

Variations in the number of vertebrae of the sardine, *Sardinops caerulea* (Girard). *In* Copeia.

CLARK, G. H.

San Francisco drag boat fishery. *In* Pacific Fisherman.

FRY, DONALD H., JR.

Sharp-headed finner whale taken at Los Angeles Harbor. *In* Journal of Mammalogy.

GODSIL, H. C.

Tuna tagging. *In* Journal du Conseil, International Council for the Exploration of the Sea.

Statistics.

For many years very comprehensive statistical data have been collected and compiled to give the detailed catch of commercial fishing boats, the registration of boats, fishing gear and licenses sold. For several years the catch data have been compiled by the use of punched cards and electrically operated sorting and tabulating machines. Beginning in 1932, the deer kill of the State has been so tabulated from the returned deer tags.

The past biennial period has seen the extension of the statistical work to include three phases of fish and game management, formerly administered without statistical knowledge, to serve as a sound administrative basis. These three extensions of statistical records cover marine sport angling, hunting and fresh-water angling.

For several years, preliminary data were kept for the ocean sport catch by a selected sample of boat, barge and pier operators who generously volunteered to keep the records for us. Beginning with the first of 1936, this work was systematized and extended to include practically all boat operators, and the results promise to be very valuable in the management of the marine fishes.

Beginning in 1935, the game kill for the preceding year and the fresh-water angling catch of the state were recorded on the applications for hunting or angling licenses. These records, although admittedly faulty in some respects, serve as the first attempt in this State to compile a statistical summary of the annual harvest of game animals and stream fishes, and with future improvements should lay the basis for better management of the resources.

The punched card system, with some enlargement in equipment and personnel, is handling the five types of records mentioned—commercial fish catch, deer kill, marine sport catch, hunting returns, and fresh-water angling. In addition the punched card setup of personnel and equipment has rendered invaluable service in producing many special reports, covering a wide range of subjects and prepared as aids to the research staff, administrative officers of the Division, legislative committees, and outside agencies such as federal officers and organizations of fishermen and packers.

WPA Projects.

Five WPA projects in connection with fisheries research have operated successfully, the most important of which is the erection of a

38x53 foot two-story concrete building on Terminal Island for the handling and storage of statistical records. This building, begun on March 2, 1936, was about three-quarters completed by June 30. The earliest project, starting with the SERA, was for clerical help at the Terminal Island Laboratory and has assisted us materially ever since. An experienced boatman is being furnished by WPA to assist in the experimental fishing involved in our studies of the flatfishes, and at Stanford University another WPA man is working up the data collected in connection with our studies of the trawler fisheries of northern California. For short intervals as needed, competent translators of foreign languages have been supplied by WPA.

Cooperation with Stanford University.

Too frequently all the cooperating is on one side but our arrangement with Stanford University is exceptional in that both sides in this agreement do their full share and a beneficial and smoothly operating program has resulted. Starting in 1929, the university and the State have cooperated in conducting a hydrobiological survey of Monterey Bay. During the biennium, Dr. Tage Skogsberg of Stanford University reported in full for publication the first five years' results.

Public Talks.

When called upon, staff members give talks on conservation, fisheries of the state, and fisheries research before scientific societies, nature clubs and local sport or service organizations. During the biennium, 41 such talks were given by the staff.

Library.

With the establishment of the Laboratory in 1917, it was essential to start a collection of literature on marine biology, especially fish, fisheries, oceanography and related subjects, and also statistical methods. This was primarily for the use of the research workers engaged in fisheries investigations for the Division of Fish and Game. Since its origin, the library has expanded and is consulted not only by the laboratory staff but by scientists of other government and private agencies, professors and students, canners, sport and commercial fishermen and various commercial firms interested in fisheries or allied industries.

In its archives are United States and foreign government documents, state reports, trade and scientific periodicals, publications of scientific societies and institutions, in addition to textbooks and reference books. A large proportion of the acquisitions are obtained by exchanging the publications of the Division with those of other organizations. The library now contains 1905 volumes and 25,420 pamphlets.

During this biennial period, considerable work was done on the subject and author catalog of the literature in the library. This catalog has proven indispensible in making the books and publications readily available to the users. In addition to this general catalog, special bibliographies are available for reference. In 1935, an author and subject index to the quarterly magazine, "California Fish and Game," volumes 1 to 20, was compiled.

FISH EXCHANGE UNIT

The activities of the Fish Exchange unit of this bureau were brought to a close on June 30, 1935, as required by the Statutes of 1933, Chapter 825.

During the fiscal year 1934–1935 the activities of the Exchange were increased. An additional supervisor of fresh fish marketing was appointed and took charge of the work in southern California.

A very extensive publicity campaign was carried on to acquaint the public with the valuable health-giving minerals of fresh fish by furnishing to the dealers, for general distribution to their customers, the pamphlet "Reasons Why You Should Make Tuesday Fish Day Too." An animated exhibit was shown at the following fairs and food shows with an attendance of more than 1,700,000 as indicated below:

Northern District

	Attendance	*Pamphlets*	*Recipe books*
San Joaquin County Fair, Stockton	135,000	1000	1200
Sacramento State Fair	453,000	5000	2400
San Francisco Food Show	161,742	8100	500
Sportsmen's Carnival, Oakland	24,000	2300	10

Southern District

Los Angeles County Fair, Pomona	445,000	6500	2900
Southern California Retail Grocers Association Food Show, Los Angeles	255,000	8200	46
National Orange Show, San Bernardino	203,000	9850	196
Western Sports Show, Los Angeles	14,000	3300	10
Ralph's Food Show, Burbank	25,000	5200	50

The total amount of pamphlets distributed during the year ending June 30, 1935, was as follows: northern district 58,614; southern district 153,452.

At the food shows a home economics instructor was employed to give continuous cooking demonstrations of the many varieties of local fish. These demonstrations attracted chefs, public school domestic science teachers, trade school teachers and thousands of housewives who were eager to learn how to prepare sea foods.

During the year all handlers of fresh fish were visited, some of them several times, to assist in a better and more economical distribution by wholesalers to retailers and by retailers to the public. Over 1200 retail dealers were contacted. Of these, 227 were chain stores and 722 were independent stores, 589 used mechanical refrigeration and 732 used ice for keeping the fish fresh; 62 had window displays and 893 had show case displays. Questioned as to what fish was the best seller, 424 said sea bass, 311 said halibut and 251 gave salmon. Reports on frozen fish sales showed 64 as good, 229 as favorable and 380 as unfavorable. Five hundred thirty-one dealers carried fish as an accommodation and 401 dealers showed their fish sales as a profitable item. Five hundred seven dealers used various forms of publicity to push their sales.

Additional printings of the fish recipe book were made and distributed, 56,888 in the northern and 53,043 in the southern part of California.

REPORT OF THE BUREAU OF HYDRAULICS

By JOHN SPENCER, Chief

The Bureau of Hydraulics was reestablished and the writer was placed in charge on November 15, 1935. The work on the pollution of public waters has been transferred to another bureau.

When the bureau was reestablished efforts were being made to obtain federal funds to provide for the installation of fish screens, the general plan contemplating the protection of about 250 ditches in the Klamath Basin in Siskiyou County. These funds failed to materialize, because of changes in the WPA procedure. Plans were prepared, however, for a number of different sized diversions, and should the present efforts to obtain federal funds be successful plans and specifications previously prepared will be suitable.

In the early part of the year portions of the fishway on the Benbow Dam on the South Fork of the Eel River were carried away by exceptionally high waters, and plans have been prepared for the reinstallation of this fishway. Work is now in progress and it is expected that the installation will be completed prior to the next upward movement of fish.

Routine work on inspection of fishways and fish screens, together with plans for installation of new ones is being carried forward as dictated by conditions.

In April, 1936, the Commission purchased an electric fish stop invented by Mr. H. T. Burkey. This device was installed on a diversion from the Shasta River, Siskiyou County, owned by the Grenada Irrigation District and Mr. Louis Foulke, for the purpose of demonstrating its effectiveness as a fish stop and general practicability in operation. Mr. Burkey selected the site for this screen and installed it to his satisfaction. The Commission placed an attendant at the screen, and netting operations were carried on below this electric screen for sixty days.

Data were obtained as to the number and kinds of fish passing through the screen, together with a graphic record of voltage and amperage, electric energy used, etc.

The data indicate that fish passed on down the diversion, even though voltage and other changes were made in the apparatus in the effort to make it operate effectively. Finally the installation was dismantled, as it appeared that no useful purpose would be served by continuing it in operation.

Experimental work as well as installations of electric fish stops have been carried on by interested parties for at least twenty years. No reports are available that may be accepted as showing the effectiveness of this method of preventing the loss of fish.

REPORT OF THE BUREAU OF LICENSES

By H. R. Dunbar, Chief

As the work of the Division, in carrying on the conservation and propagation of fish and game, is supported entirely by the sale of licenses, income from privilege taxes and fines for violations of the fish and game laws, it is gratifying to report that the income for the biennium just ended shows a marked increase over the previous biennial period.

Following is a comparative statement showing the revenue from license sales and other sources for each fiscal year since 1928–29, which shows the trend of increase or decrease during that period:

Fiscal Year	*License Sales*	*Other Income*	*Total*
1928–1929	$1,126,297 50	$276,019 88	$1,402,317 38
1929–1930	1,134,689 92	297,043 29	1,431,733 21
1930–1931	1,159,367 20	199,744 27	1,359,111 47
1931–1932	1,128,477 70	149,671 10	1,278,148 80
1932–1933	974,068 92	161,286 02	1,135,354 94
1933–1934	881,421 73	275,442 74	1,156,864 47
1934–1935	916,885 84	356,555 52	1,273,441 36
1935–1936	1,091,672 50	345,974 96	1,437,647 46

On June 30, 1936, the sum of $304,215 was being held in Bond Deposits for account of the following licenses:

Hunting, 1935–36	$22,593 00
Hunting, 1936–37	10,145 00
Angling, 1936	269,967 00
Deer tag, 1936	1,010 00
Market, 1936–37	500 00
Total	$304,215 00

Practically all of the Bond Deposit money will be credited to the fiscal year beginning July 1, 1936.

Following are statements of the sale of hunting, angling, deer tag and market licenses, by license years, and the income from privilege taxes and court fines by fiscal years. The purpose of presenting these statements is to demonstrate the decrease and increase of the principal sources of income during the depression period.

HUNTING

Year	*Value*	*Number*
1928	$464,145 00	228,696
1929	488,638 00	241,709
1930	464,157 00	231,970
1931	424,188 00	214,577
1931–1932*	453,159 15	154,031
1933–1934	334,746 50	171,139
1934–1935	338,538 50	174,667
1935–1936†	371,000 00	190,000.

* Period of 18 months and fee increased 50 per cent during this period.
† All accounts not closed—totals approximate.

ANGLING

Year	Value	Number
1928	$445,764 00	217,788
1929	471,826 00	225,774
1930	508,876 00	248,319
1931	497,317 00	242,857
1932	436,373 00	212,662
1933	358,568 00	175,936
1934	430,128 50	211,190
1935	457,373 50	224,661

DEER TAG

Year	Value	Number
1927	$110,760 00	110,760
1928	105,638 00	105,638
1929	115,472 00	115,472
1930	123,999 00	123,999
1931	129,005 00	129,005
1932	96,702 00	96,702
1933	95,776 00	95,776
1934	108,923 00	108,923
1935	110,808 00	110,808

MARKET (COMMERCIAL)

Year	Value	Number
1928–1929	$53,400 00	5340
1929–1930	60,140 00	6014
1930–1931	61,790 00	6179
1931–1932	56,510 00	5651
1932–1933	49,550 00	4955
1933–1934	49,910 00	4991
1934–1935	53,230 00	5323
1935–1936	60,070 00	6007

PRIVILEGE TAXES

Fiscal Year	Amount
1928–1929	$175,805 85
1929–1930	202,396 07
1930–1931	122,103 29
1931–1932	84,446 17
1932–1933	120,156 07
1933–1934	192,637 06
1934–1935	305,386 06
1935–1936	278,498 82

COURT FINES

Fiscal Year	Amount
1928–1929	$86,780 28
1929–1930	84,872 40
1930–1931	68,178 78
1931–1932	54,498 19
1932–1933	30,784 13
1933–1934	27,107 56
1934–1935	36,400 42
1935–1936	49,469 32

Effective January 1, 1935, with the issuance of the 1935 series of angling licenses, a new style identification button was adopted. This button is oblong in shape, $2\frac{1}{4}$ inches long by $1\frac{1}{2}$ inches wide, with an open face window, $1\frac{7}{8}$ inches long by $1\frac{1}{8}$ inches wide. The form of the printed license was such that when folded and inserted in the badge, the person's name, personal description and signature were visible. This style badge proved very satisfactory with the sportsmen and made the work of the wardens, in checking licenses, much easier. By authority vested in the Commission by section 400 of the Fish and Game Code, it has been ordered that the badge must be worn on the outside of the clothing above the waist line and to be visible at all times. This same style badge was adopted for the hunting license also. A distinction between the two licenses is made

by printing across the face of the license the word "Angling" or "Hunting" together with the year.

During the 1935 session of the state legislature, a law was passed providing that a license would be required by the owner of any vessel, who for profit, transported persons to any area for the purpose of fishing. The fee for this license is $1. As of June 30, 1936, 210 boat operator permits were issued.

The application of section 421 of the Fish and Game Code, regarding the requirement of an angling license to angle for game fish in the ocean has increased the angling license sales for the period ending June 30, 1936, of the current series, by approximately $50,000.

The 1935 session of the legislature passed another law requiring that in addition to the payment of the privilege tax, a tax of one-half cent be paid on each pound of salmon received, based on the weight in the round. For the period ending June 30, 1936, the sum of $1,998.78 has been paid.

The law provides that licenses shall be issued free of charge as follows: Hunting and angling licenses to Veterans of the Civil War and angling licenses to indigent Indians, who have not been previously convicted for a violation of the fish and game laws. During the angling season of 1935 and the hunting season of 1935–36, nineteen angling and seven hunting licenses were issued to Veterans of the Civil War. For the six month's period ending June 30, 1936, one hundred seventy-six free angling licenses were issued to Indians.

In the distribution of the 1935–36 series of hunting licenses a new form of application was adopted in which the cooperation of the sportsmen is asked in giving certain information as to the number of each species of game taken in the previous season and the county in which they were taken. The results obtained were so satisfying that the plan has been adopted with the issuance of the angling licenses also.

At the present time, licenses are distributed throughout the State to agencies by three methods: viz. to county clerks, who redistribute them to agencies in their own counties; to agents who pay cash in advance; and to agents, who first have been placed under bond, on a credit basis. It is believed that better distribution, a more prompt accounting of the license sales and a better control of the agencies, could be had if the distribution were centered in one direct method. It is our recommendation that the Commission consider having the law, in so far as it applies to license distribution, amended at the next session of the legislature to provide for one method of direct distribution to agencies by the Division offices.

In the appendix, statements may be found, showing the sales of the different kinds of licenses for the years 1934 and 1935.

STATISTICAL REPORTS

STATEMENT OF INCOME

July 1, 1934, to June 30, 1935, of the Eighty-sixth Fiscal Year

FISH AND GAME PRESERVATION

Current Year:		
License sales—		
Angling licenses, 1934	$346,409 50	
Angling licenses, 1935	82,573 00	
Commercial hunting club licenses, 1934-35	1,225 00	
Commercial hunting club operators' licenses, 1934-35	265 00	
Deer tags, 1934	108,919 00	
Deer tags, 1935	4 00	
Fish breeders' licenses, 1934	25 00	
Fish breeders' licenses, 1935	330 00	
Fish importers' licenses, 1934	35 00	
Fish importers' licenses, 1935	85 00	
Fish packers' and wholesale shell fish dealers' licenses, 1934-35	930 00	
Game breeders' licenses, 1934	115 00	
Game breeders' licenses, 1935	977 50	
Hunting licenses, 1933-34	3,931 50	
Hunting licenses, 1934-35	315,593 34	
Hunting licenses, 1935-36	27 00	
Kelp licenses, 1934	20 00	
Kelp licenses, 1935	30 00	
Market fishermen's licenses, 1934-35	28,790 00	
Market fishermen's licenses, 1935-36	24,920 00	
Trapping licenses, 1934-35	1,681 00	
Total licenses sales		$916,885 84
Other income:		
Court fines	$36,400 42	
Fish packers' tax	305,386 08	
Fish tag sales	2,555 60	
Game tag sales	137 25	
Importers' contributions	315 00	
Interest on bank balances	6,201 93	
Kelp tax	99 77	
Lease of kelp beds	1,309 20	
Miscellaneous sales	3,603 82	
Publication sales	546 45	
Total other income		$356,555 52
Prior year—85th:		
Dividends, California National Bank	$18,545 08	
Dividends, Trinity County Bank at Weaverville	178 50	
Total prior year		$18,723 58
Grand total Fish and Game Preservation Fund		$1,254,717 78
Revenue for the General Fund (part of)		
Unclaimed checks and deposits		168 15
Grand total of all funds		$1,254,885 93

STATEMENT OF EXPENDITURES

For the Period July 1, 1934, to June 30, 1935, of the Eighty-sixth Fiscal Year

Function	Salaries and wages	Materials and supplies	Service and expense	Property and equipment	Total
Administration:					
Executive	$6,754 83				$6,754 83
Clerical and office	5,520 00	$1,013 85	$267 91	$52 49	6,854 25
Printing Fish and Game Magazine		1,778 05			1,778 05
Printing, general		3,639 61			3,639 61
Automobiles		487 53	440 90	1,527 43	2,455 86
Traveling			2,684 36		2,684 36
Postage			4,300 78		4,300 78
Telephone and telegraph			3,841 68		3,841 68
Freight, cartage and express			835 00		835 00
Rent			12,991 22		12,991 22
Accident and death claims			6,183 28		6,183 28
Accounting pro rata	5,661 90				5,661 90
Legal			2,907 75	24 00	2,931 75
Premiums on bonds			50 00		50 00
Publicity			1,179 65		1,179 65
Pro rata General Fund-Expense, Chapt. 923-33			5,992 19		5,992 19
Total administration	$17,936 73	$6,919 04	$41,674 72	$1,603 92	$68,134 41
Bureau Education and Research:					
Clerical and office	$1,920 00	$13 04	$28 62		$1,961 66
Automobiles		584 66	129 94		714 60
Traveling			2,428 66		2,428 66
Photography		11 84	72 93		84 77
Library	1,080 00	19 45	67 67	$188 65	1,355 77
Research	3,000 00	93 69	38 90	12 30	3,144 89
Publicity	1,381 84		157 87		1,539 71
Total Bureau Education and Research	$7,381 84	$722 68	$2,924 59	$200 95	$11,230 06
Bureau Patrol and Law Enforcement:					
Chief and assistants	$11,100 00				$11,100 00
Clerical and office	3,180 00	$28 20	$63 50	$76 12	3,347 82
Automobiles		31,259 21	13,298 80	14,217 43	58,775 44
Traveling			43,545 21		43,545 21
Postage			670 66		670 66
Telephone and telegraph			1,916 87		1,916 87
Freight, cartage and express			9 61		9 61
Rent			758 21		758 21
Captains and wardens	185,306 00	972 39	1,004 70	26 51	187,309 60
Launches		1,744 82	1,090 01	310 27	3,145 10
Fish planting	4,620 00	645 06	1,899 74	1,289 85	8,454 65
Premiums on bonds			445 00		445 00
Cooks	1,016 12				1,016 12
Commercial fisheries patrol:					
Chief	2,760 00				2,760 00
Captains and wardens	13,227 10	29 30	15 60	12 52	13,284 52
Launches	11,516 52	8,364 03	5,174 07	323 16	25,377 78
Fish cannery inspectors, seasonal	8,005 31				8,005 31
Traveling			5,301 90		5,301 90
Rent			829 00		829 00
Automobiles		940 71	498 91		1,439 62
Temporary help	408 05				408 05
Total Bureau Patrol and Law Enforcement	$241,139 10	$43,983 72	$76,521 79	$16,255 86	$377,900 47
Bureau Commercial Fisheries:					
Chief and assistants	$13,620 00				$13,620 00
Clerical and office	9,600 00	$62 50	$85 78	$179 22	9,927 50
Automobiles		644 59	307 04	454 12	1,405 75
Traveling			5,995 45		5,995 45
Telephone and telegraph			698 42		698 42
Freight, cartage and express			201 95		201 95
Rent			140 34		140 34
Heat, light, water and power			383 05		383 05
Hydro Biological Survey, Monterey Bay			900 00		900 00
Research	2,280 00	69 07	27 52	248 40	2,624 99
Laboratory	23,029 34	1,007 55	1,234 32	559 67	25,830 88
Statistics		1,141 28	2,071 50	864 72	4,077 50
Temporary help	275 87				275 87
Fish cannery research			5,000 00		5,000 00
Total Bureau Commercial Fisheries	$48,805 21	$2,924 99	$17,045 37	$2,306 13	$71,081 70
Less: Indirect abatements deer tag tabulation			$328 60		$328 60
Total	$48,805 21	$2,924 99	$16,716 77	$2,306 13	$70,753 10

STATEMENT OF EXPENDITURES

For the Period July 1, 1934, to June 30, 1935, of the Eighty-sixth Fiscal Year—Continued

Function	Salaries and wages	Materials and supplies	Service and expense	Property and equipment	Total
Bureau Fish Culture:					
Chief and assistants	$7,260 00	$2 89	$5 00		$7,267 89
Clerical and office	5,372 90	25 09	12 25	$73 82	5,484 06
Automobiles		8,015 18	3,417 11	8,925 41	20,357 70
Traveling			8,128 78		8,128 78
Postage			222 68		222 68
Telephone and telegraph			1,122 03		1,122 03
Freight, cartage and express			932 79		932 79
Rent			3,399 59		3,399 59
Heat, light and power			1,787 61		1,787 61
Hatcheries	109,097 20	72,637 70	879 24	1,405 16	184,019 30
Fish cars	3,540 00	280 35	2,595 94		6,416 29
Blue printing			114 53		114 53
Cooperative research	2,144 20	825 52	1,099 08	264 74	4,333 54
Temporary help	1,619 34				1,619 34
Fish Hatchery assistant, seasonal	25,340 35				25,340 35
Hydraulic engineering	2,400 00	61 29	987 47	49 50	3,498 26
Special field	8,139 05	57 25	9 40	19 35	8,225 05
Fish rescue:					
Miscellaneous supplies		55 96		8 54	64 50
Heavy truck mileage			336 51		336 51
Travel			1,807 85		1,807 85
Rent and water service			118 00		118 00
Motorized equipment		199 80	38 43	551 25	789 48
Chief and assistants	2,310 00		235 53		2,545 53
Total Bureau Fish Culture	$167,223 04	$82,161 03	$27,249 82	$11,297 77	$287,931 66
Bureau Game Propagation:					
Chief and assistants	$5,460 00				$5,460 00
Clerical and office	840 00				840 00
Automobiles		$910 20	$353 20	$963 66	2,227 06
Traveling			2,175 82		2,175 82
Postage			26 67		26 67
Telephone and telegraph			202 65		202 65
Freight, cartage and express			17 58		17 58
Heat, light, water and power			2,112 01		2,112 01
Maintenance	13,296 00	10,075 17	265 78	6 34	23,643 29
Temporary help	445 70				445 70
Quail trapping and expansion of quail program	4,620 00	1,263 98	2,527 03	16 29	8,427 30
Purchase of quail and pheasants		4,134 60			4,134 60
Total Bureau Game Propagation	$24,661 70	$16,383 95	$7,680 74	$986 29	$49,712 68
Bureau Game Refuges:					
Chief and assistants	$8,499 96				$8,499 96
Clerical and office	1,920 00	$11 83	$11 50		1,943 33
Automobiles		554 90	408 80	$702 94	1,666 64
Traveling			4,840 26		4,840 26
Freight, cartage and express			4 88		4 88
Blue printing			4 18		4 18
Research			328 60		328 60
Lion hunters	5,464 00				5,464 00
Refuge posting	900 00				900 00
Predatory animal control			6,450 00		6,450 00
Refuge maintenance	8,155 32	3,178 86	3,661 90	1,650 48	16,646 56
Predatory animal hunters and trappers, seasonal	6,000 00				6,000 00
Temporary help, seasonal	3,717 50				3,717 50
Total Bureau Game Refuge	$34,656 78	$3,745 59	$15,710 12	$2,353 42	$56,465 91
Bureau Licenses:					
Clerical and office	$13,140 00	$130 51	$14 45	$93 79	$13,378 75
Printing, licenses and applications		2,571 34			2,571 34
Traveling			413 62		413 62
Postage			1,058 08		1,058 08
Freight, cartage and express			202 96		202 96
Premiums on bonds			1,174 54		1,174 54
Identification License buttons		9,011 69			9,011 69
Total Bureau Licenses	$13,140 00	$11,713 54	$2,863 65	$93 79	$27,810 98
Total eighty-sixth fiscal year expense paid from support appropriations	$554,944 40	$168,554 54	$191,342 20	$35,098 13	$949,939 27

STATEMENT OF EXPENDITURES

For the Period July 1, 1934, to June 30, 1935, of the Eighty-sixth Fiscal Year—Continued

Function	Salaries and wages	Materials and supplies	Service and expense	Property and equipment	Total
Prior Year Expense for Support, Eighty-fifth Fiscal Year					$17,437 33
Total Eighty-fifth and Eighty-sixth Fiscal Year Expense Paid from Support Appropriations					$967,376 60
Special Items:					
Eighty-sixth Fiscal Year:					
License commissions			$39,586 99		$39,586 99
Construction, Russian River jetties, Chap. 989-33			504 27		504 27
State Fair and other exhibits		$2 64	71 31		73 95
California Code Commission for expenses, Chap. 645-33			3,362 59		3,362 59
Electro Metals Co. claim, Chap. 599-31			18,750 00		18,750 00
Total Eighty-sixth Fiscal Year		$2 64	$62,275 16		$62,277 80
Eighty-fifth Fiscal Year:					
License commissions			$315 65		
Construction Russian River jetties, Chap. 989-33			30 00		
Claim of Chief Accounting Officer of Dept. Finance, Chap. 991-33			670 00		
Total Eighty-fifth Fiscal Year					$324 35
Eighty-fourth Fiscal Year:					
Expenditure for reimbursing bank account on account of failure of California National Bank, Dept. of Finance, Chap. 141-33					$37,090 19
Total Special Items					$24,863 26
Permanent Improvements:					
Construction, improvements and equipment:					
Eighty-sixth fiscal year	$5,682 50	$4,737 92	$8,047 19	$4,528 08	$22,995 69
Eighty-fifth fiscal year					46 32
Total Permanent Improvements					$23,042 01
Bureau of Commercial Fisheries, Chapter 825-33, Fresh Fish Marketing:					
Eighty-sixth Fiscal Year:					
Chief and assistants	$6,223 49				$6,223 49
Clerical and office	1,320 00	$192 00		$6 35	1,518 35
Printing		4,983 33			4,983 33
Automobile		221 99	$133 23	659 46	1,014 68
Traveling			2,715 24		2,715 24
Postage			1,389 50		1,389 50
Telephone and telegraph			6 85		6 85
Freight, cartage and express			649 81		649 81
Rent			95 23		95 23
Exhibits		323 25	2,352 40		2,675 65
Temporary help	292 63				292 63
Pro rata Fish and Game administration		271 05		2,984 82	3,255 87
Total Eighty-sixth Fiscal Year	$7,836 12	$5,991 62	$7,342 26	$3,650 63	$24,820 63
Eighty-fifth Fiscal Year					$11 55
Total Bureau of Commercial Fisheries, Chapter 825-33, Fresh Fish Marketing, Eighty-fifth and Eighty-sixth Fiscal Years					$24,809 08
Contributions to Retirement System					$17,168 51
Total from Current Biennium					$1,057,259 46
Prior Biennium Appropriations:					
Eighty-fifth Fiscal Year:					
Permanent Improvements:					
Construction, improvements and equipment					$583 19
Eighty-fourth Fiscal Year:					
Support					$853 65
Total from Prior Biennium Appropriations					$270 46
Grand Total Proprietary Group					$1,057,529 92

STATEMENT OF REVENUE

For the Period July 1, 1935, to June 30, 1936, of the Eighty-seventh Fiscal Year

Revenue for the Fish and Game Preservation Fund, Current Year:		
License sales:		
Angling licenses, 1935	$374,800 50	
Angling licenses, 1936	166,829 00	
Commercial hunting club licenses, 1935-1936	950 00	
Commercial hunting club operators' licenses, 1935-1936	215 00	
Deer tags, 1935	110,804 00	
Deer tags, 1936	3 00	
Fish breeders' licenses, 1935	25 00	
Fish breeders' licenses, 1936	320 00	
Fish importers' licenses, 1935	10 00	
Fish importers' licenses, 1936	85 00	
Fishing party vessel permit, 1936	210 00	
Fish packers' and wholesale shell fish dealers' licenses, 1935-1936	1,040 00	
Game breeders' licenses, 1935	160 00	
Game breeders' licenses, 1936	1,145 00	
Hunting licenses, 1934-1935	22,205 00	
Hunting licenses, 1935-1936	348,002 00	
Hunting licenses, 1936-1937	47 00	
Kelp licenses, 1935	10 00	
Kelp licenses, 1936	30 00	
Market fishermen's licenses, 1935-1936	35,150 00	
Market fishermen's licenses, 1936-1937	28,100 00	
Trapping licenses, 1935-1936	1,532 00	
Total license sales		$1,091,672 50
Other income:		
Court fines	$49,469 32	
Fish packers' tax	278,498 82	
Fish tag sales	3,120 66	
Game tag sales	169 62	
Importers' contributions	541 00	
Interest on bank balances	6,825 65	
Kelp tax	214 78	
Lease of kelp beds	1,025 60	
Miscellaneous sales	3,424 26	
Publication sales	686 47	
Salmon tax—Chap. 1015-35	1,998 78	
Total other income		345,974 96
Total Fish and Game Preservation Fund		$1,437,647 46
Revenue for the General Fund, Current Year:		
Unclaimed checks and deposits		38 90
Grand total all funds		$1,437,686 36

STATEMENT OF EXPENDITURES

For the Period July 1, 1935, to June 30, 1936, of the Eighty-seventh Fiscal Year

Function	Salaries and wages	Materials and supplies	Service and expense	Property and equipment	Total
OPERATING EXPENDITURES, EIGHTY-SEVENTH FISCAL YEAR					
Administration:					
Executive	$4,999 92				$4,999 92
Clerical and office	5,520 00	$1,483 40	$830 89	$189 16	8,023 45
Printing, general		4,705 37			4,705 37
Automobiles		471 49	311 32		782 81
Traveling			3,625 30		3,625 30
Postage			4,463 80		4,463 80
Telephone and telegraph			5,542 42		5,542 42
Freight, cartage and express			976 84		976 84
Rent			12,115 15		12,115 15
Accident and death claims			3,643 08		3,643 08
Accounting pro rata	13,000 00				13,000 00
Legal			4,934 63		4,934 63
Publicity			1,328 91		1,328 91
Printing fish and game magazine		3,210 99			3,210 99
Premiums on bonds			35 00		35 00
Photography			20 28		20 28
Library	1,680 00	147 68	64 46	186 28	2,078 42
Pro rata General Fund expense, Chap. 923-33			5,176 12		5,176 12
Federal cooperation	360 00				360 00
Total Administration	$25,559 92	$10,018 93	$43,068 20	$375 44	$79,022 49
Bureau of Patrol and Law Enforcement:					
Chief and assistants	$11,100 00				$11,100 00
Clerical and office	5,094 66	$57 36	$37 13	$109 80	5,298 95
Automobile		33,717 66	12,559 54	24,958 38	71,235 58
Traveling			50,355 90		50,355 90
Postage			797 90		797 90
Telephone and telegraph			1,567 97		1,567 97
Freight, cartage and express			7 66		7 66
Rent			514 19		514 19
Captains and wardens	187,192 58	754 58	848 88	111 24	188,907 28
Launches		2,985 85	1,794 20	409 51	5,189 56
Heat, light, water and power			7 63		7 63
Fish planting	4,572 33	647 56	2,909 15	3 00	8,132 04
Temporary help	253 33				253 33
Premiums on bonds			415 24		415 24
Commercial fisheries patrol:					
Superintendent	2,790 00				2,790 00
Captains and wardens	12,120 00	11 79	139 53		12,271 32
Launches	12,725 98	6,014 98	5,231 42	269 35	24,241 73
Fish cannery inspectors, seasonal	14,388 03		580 91		14,968 94
Rent			945 70		945 70
Automobiles		358 91	390 68		749 59
Temporary help	108 87				108 87
Total Bureau of Patrol and Law Enforcement	$250,345 78	$44,548 69	$79,103 63	$25,861 28	$399,859 38
Bureau of Commercial Fisheries:					
Chief and assistants	$11,093 68		$2,385 00		$13,478 68
Clerical and office	9,490 00	$23 51	42 79	$101 07	9,657 37
Automobiles		574 36	196 37		770 73
Traveling			7,569 93		7,569 93
Telephone and telegraph			718 80		718 80
Fish tags		389 13			389 13
Hydro-Biological Survey, Monterey Bay			1,000 00		1,000 00
Freight, cartage and express			271 90		271 90
Heat, light, water and power			417 75		417 75
Rent			144 37		144 37
Research	2,280 00	62 29	26 55		2,368 84
Laboratory	25,759 67	3,287 14	507 43	2,261 81	31,816 05
Cooperative research			3,600 00		3,600 00
Statistics		1,924 98	2,182 39	776 18	4,883 55
Temporary help	467 93				467 93
Terminal Island grounds	425 82	1 37	232 62	6 76	666 57
Total Bureau of Commercial Fisheries	$49,517 10	$6,262 78	$19,295 90	$3,145 82	$78,221 60

STATEMENT OF EXPENDITURES

For the Period July 1, 1935, to June 30, 1936, of the Eighty-seventh Fiscal Year—Continued

Function	Salaries and wages	Materials and supplies	Service and expense	Property and equipment	Total
Bureau of Fish Conservation:					
Chief and assistants	$7,260 00				$7,260 00
Clerical and office	5,297 87	$51 74	$10 50	$31 90	5,392 01
Automobiles		8,845 05	4,082 09	2,371 33	15,298 47
Traveling			10,519 00		10,519 00
Postage			222 06		222 06
Telephone and telegraph			1,321 78		1,321 78
Freight, cartage and express			863 43		863 43
Rent			3,247 54		3,247 54
Heat, light and power			1,860 53		1,860 53
Hatcheries	110,095 79	93,216 94	1,274 45	2,963 29	207,550 47
Fish cars	3,320 17	345 67	3,139 62	1 96	6,807 42
Blue Printing			59 93		59 93
Cooperative research	3,035 59	1,054 66	972 94	21 04	5,084 23
Temporary help	1,475 76				1,475 76
Fish hatchery assistants, seasonal	26,391 53				26,391 53
Special field	13,560 00	275 04	19 40	391 91	14,246 35
Fish rescue	1,935 16	603 92	1,923 33	549 68	5,012 09
Statistics	273 55	42 20	1 72	582 64	900 11
Total Bureau of Fish Conservation	$172,645 42	$104,435 22	$29,518 32	$6,913 75	$313,512 71
Bureau of Hydraulics:					
Chief and assistants	$5,152 35	$25 08	$995 84		$6,173 27
Traveling			1,000 52		1,000 52
Clerical and office	1,920 00	18 24	142 14	$124 75	2,205 13
Automobiles		146 04	41 55	898 78	1,086 37
Cooperative research		13 55			13 55
Photography			2 18		2 18
Heat, light, water and power			34 52		34 52
Research		23 40			23 40
Temporary help	72 59				72 59
Blue printing			27 18		27 18
Total Bureau of Hydraulics	$7,144 94	$226 31	$2,243 93	$1,023 53	$10,638 71
Bureau of Game Conservation:					
Chief and assistants	$14,781 63				$14,781 63
Clerical and office	2,960 00	$50 27		$248 53	3,258 80
Automobiles		2,364 22	$1,094 84	903 51	4,362 57
Traveling			6,455 98		6,455 98
Postage			2 03		2 03
Telephone and telegraph			358 84		358 84
Freight, cartage and express			85 13		85 13
Heat, light, water and power			4,122 22		4,122 22
Maintenance	12,753 38	11,868 10	359 87	233 45	25,214 80
Temporary help	2,538 09				2,538 09
Quail trapping and expansion of quail program	3,620 00	101 02	173 66		3,894 68
Refuge posting	486 29				486 29
Statistics	1,570 84	1,058 78	168 96	569 98	3,368 56
Refuge maintenance	5,502 68	2,102 05	2,576 37	11 76	10,192 86
Temporary help, seasonal	3,440 32				3,440 32
Rent			300 00		300 00
Total Bureau of Game Conservation	$47,653 23	$17,544 44	$15,697 90	$1,967 23	$82,862 80
Bureau of Licenses:					
Clerical and office	$12,604 51	$259 49	$151 67	$200 31	$13,215 98
Printing, licenses and applications		6,084 06	529 40		6,613 46
Postage			2,361 63		2,361 63
Temporary help	1,160 32				1,160 32
Freight, cartage and express			128 01		128 01
Premiums on bonds			1,240 50		1,240 50
Identification license buttons		10,399 22			10,399 22
License commissions			49,784 12		49,784 12
Total Bureau of Licenses	$13,764 83	$16,742 77	$54,195 33	$200 31	$84,903 24
Special Item:					
State Fair and other exhibits (payable from support)	$40 50	$113 48	$1,274 30		$1,428 28
Total Special Items	$40 50	$113 48	$1,274 30		$1,428 28
Total eighty-seventh fiscal year expense paid from support appropriations	$566,671 72	$199,892 62	$244,397 51	$39,487 36	$1,050,449 21

STATEMENT OF EXPENDITURES

For the Period July 1, 1935, to June 30, 1936, of the Eighty-seventh Fiscal Year—Continued

Function	Salaries and wages	Materials and supplies	Service and expense	Property and equipment	Total
Special Items:					
Claim of Chief Accounting Officer of Department of Finance			$1,516 76		$1,516 76
Support of Napa State Farm			6,387 50		6,387 50
Predatory Animal Control:					
Lion hunters	$4,080 67				4,080 67
Predatory animal control		$769 35	5,602 28		6,371 63
Predatory animal hunters and trappers, seasonal	6,200 00				6,200 00
Automobiles			26 99	$2,512 12	2,539 11
Traveling			898 50		898 50
Total Predatory Animal Control	$10,280 67	$769 35	$6,527 77	$2,512 12	$20,089 91
Total Special Items	$10,280 67	$769 35	$14,432 03	$2,512 12	$27,994 17
Total Expenditures for Additions and Betterments:					
Permanent Improvements:					
Construction, improvements and equipment and purchase of game refuges and public shooting grounds, Chap. 341-35	$10,336 65	$18,911 09	$12,348 24	$30,110 28	$71,706 26
Contributions to Employee's Retirement System					18,038 86
Total Expenditures, eighty-seventh fiscal year from current biennium					$1,168,188 50
Prior Biennium Appropriations:					
Eighty-seventh fiscal year:					
Operating Expenditures:					
Special items:					
California Code Commission Expenses, Chap. 645-33			$635 48		
Construction Russian River jetties			406 37		
Total Operating Expenditures, eighty-seventh fiscal year					$1,041 85
Expenditures for Additions and Betterments:					
Construction, improvements and equipment, Chap. 278-33	$2,691 89	$9,511 82	$2,443 59	$17,452 07	$32,099 37
Eighty-sixth fiscal year:					
Operating Expenditures:					
Support			$0 05		
Fresh fish marketing			2 19		
Special item: License commissions			92		
Total Operating Expenditures, eighty-sixth fiscal year					$3 16
Eighty-fifth fiscal year:					
Operating Expenditures:					
Support			$4 20		
Special Item:					
Claim of Chief Accounting Officer of Dept. of Finance, Chap. 991-33			35 50		
Total Operating Expenditures, eighty-fifth fiscal year					$39 70
Total prior biennium appropriations					$33,104 68
Grand total proprietary group					$1,201,293 18

ANGLING LICENSE SALES, YEAR 1934

County	Total	Citizen	Duplicate	Non-resident	Alien
Alameda	$38,953 00	$37,994 00	$2 00	$12 00	$945 00
Alpine	433 00	310 00		123 00	
Amador	1,559 50	1,534 00	50		25 00
Butte	6,208 00	6,184 00		9 00	15 00
Calaveras	1,020 50	1,016 00	1 50	3 00	
Colusa	1,053 50	1,052 00	1 50		
Contra Costa	12,099 50	11,688 00	6 50		405 00
Del Norte	3,275 00	3,060 00	1 00	204 00	10 00
El Dorado	3,216 50	3,176 00	50	15 00	25 00
Fresno	14,070 00	13,736 00	4 00	15 00	315 00
Glenn	1,079 00	1,066 00	2 00	6 00	5 00
Humboldt	9,762 00	9,614 00	5 00	48 00	95 00
Imperial	851 00	836 00			15 00
Inyo	7,886 50	7,784 00	4 50	63 00	35 00
Kern	5,902 50	5,902 00	50		
Kings	1,140 50	1,124 00	1 50		15 00
Lake	1,381 00	1,364 00		12 00	5 00
Lassen	2,648 50	2,558 00	50	30 00	60 00
Los Angeles	80,742 00	79,778 00	30 00	129 00	805 00
Madera	1,818 50	1,808 00	50		10 00
Marin	5,834 00	5,834 00			
Mariposa	2,692 00	2,618 00		54 00	20 00
Mendocino	4,991 00	4,964 00	1 00	6 00	20 00
Merced	2,278 00	2,258 00	2 00	3 00	15 00
Modoc	1,252 00	1,252 00			
Mono	7,266 00	5,524 00	2 00	1,725 00	15 00
Monterey	4,716 50	4,440 00	3 50	3 00	270 00
Napa	3,741 50	3,674 00	5 50	12 00	50 00
Nevada	6,610 50	4,602 00	50	1,878 00	130 00
Orange	4,250 50	4,218 00	50	12 00	20 00
Placer	4,151 00	4,070 00	1 00		80 00
Plumas	4,750 00	4,418 00	3 00	234 00	95 00
Riverside	3,738 50	3,700 00	50	3 00	35 00
Sacramento	17,965 00	15,782 00	37 00	66 00	2,080 00
San Benito	733 00	702 00	1 00		30 00
San Bernardino	10,206 50	10,166 00	50	15 00	25 00
San Diego	8,612 50	8,460 00	50	117 00	35 00
San Francisco	42,888 50	40,384 00	45 50	39 00	2,420 00
San Joaquin	12,554 50	11,934 00	2 50	3 00	615 00
San Luis Obispo	3,812 00	3,696 00	2 00	9 00	105 00
San Mateo	3,678 50	3,538 00	1 50	9 00	130 00
Santa Barbara	4,408 00	4,228 00			180 00
Santa Clara	10,855 50	10,558 00	6 50	6 00	285 00
Santa Cruz	5,951 00	5,742 00	3 00	6 00	200 00
Shasta	4,685 00	4,584 00	3 00	33 00	65 00
Sierra	1,096 50	1,074 00	50	12 00	10 00
Siskiyou	7,860 50	7,298 00	5 50	237 00	320 00
Solano	7,661 50	7,206 00	50		455 00
Sonoma	10,558 50	10,296 00	9 50	3 00	250 00
Stanislaus	5,274 50	5,222 00	4 50	3 00	45 00
Sutter	902 50	872 00	50		30 00
Tehama	2,561 50	2,548 00	1 50	12 00	
Trinity	689 00	686 00		3 00	
Tulare	6,168 50	6,072 00	50	6 00	90 00
Tuolumne	3,061 00	3,038 00		3 00	20 00
Ventura	2,422 00	2,422 00			
Yolo	2,060 00	1,972 00	5 00	3 00	80 00
Yuba	2,091 00	1,986 00	2 00	3 00	100 00
Totals	$430,128 50	$413,622 00	$214 50	$5,187 00	$11,105 00
Number	211,190	206,811	429	1,729	2,221

ANGLING LICENSE SALES, YEAR 1935

County	Total	Citizen	Duplicate	Non-resident	Alien
Alameda	$44,058 00	$42,982 00	$1 00	$30 00	$1,045 00
Alpine	546 50	310 00	50	216 00	20 00
Amador	1,667 50	1,652 00	50		15 00
Butte	6,537 50	6,508 00	50	9 00	20 00
Calaveras	1,254 00	1,254 00			
Colusa	1,115 00	1,114 00	1 00		
Contra Costa	11,584 00	11,236 00	8 00		340 00
Del Norte	3,559 50	3,258 00	2 50	279 00	20 00
El Dorado	3,741 00	3,704 00	4 00	3 00	30 00
Fresno	14,280 00	13,964 00	5 00	21 00	290 00
Glenn	1,093 00	1,090 00	3 00		
Humboldt	9,582 00	9,492 00	4 00	36 00	50 00
Imperial	738 00	738 00			
Inyo	6,771 50	6,658 00	4 50	54 00	55 00
Kern	7,118 00	7,118 00			
Kings	1,257 00	1,204 00	2 00	6 00	45 00
Lake	1,486 50	1,480 00	1 50		5 00
Lassen	2,762 00	2,682 00	5 00	30 00	45 00
Los Angeles	83,275 50	81,984 00	51 50	195 00	1,045 00
Madera	2,256 50	2,246 00	50		10 00
Marin	5,929 50	5,848 00	1 50	15 00	65 00
Mariposa	3,083 50	2,954 00	50	99 00	30 00
Mendocino	5,401 50	5,370 00	2 50	9 00	20 00
Merced	2,507 00	2,480 00	4 00	3 00	20 00
Modoc	1,341 00	1,326 00		15 00	
Mono	10,380 50	6,096 00	5 50	4,254 00	25 00
Monterey	5,277 50	4,930 00	4 50	3 00	340 00
Napa	3,986 50	3,924 00	6 50	6 00	50 00
Nevada	5,425 50	4,766 00	3 50	486 00	170 00
Orange	4,127 50	4,106 00	50	6 00	15 00
Placer	4,351 00	4,224 00	8 00	9 00	110 00
Plumas	5,109 00	4,922 00	6 00	96 00	85 00
Riverside	3,755 50	3,742 00	2 50	6 00	5 00
Sacramento	19,908 50	17,412 00	67 50	264 00	2,165 00
San Benito	759 50	744 00	50		15 00
San Bernardino	10,019 00	10,004 00		15 00	
San Diego	9,435 50	9,232 00	3 50	135 00	65 00
San Francisco	44,812 50	42,362 00	88 50	87 00	2,275 00
San Joaquin	14,478 50	13,846 00	1 50	6 00	625 00
San Luis Obispo	5,050 50	4,970 00	7 50	3 00	70 00
San Mateo	3,881 00	3,740 00	1 00		140 00
Santa Barbara	5,230 00	5,220 00	1 00	9 00	
Santa Clara	12,003 00	11,642 00	7 00	9 00	345 00
Santa Cruz	6,382 00	6,120 00	8 00	9 00	245 00
Shasta	4,832 50	4,772 00	5 50	15 00	40 00
Sierra	1,223 00	1,194 00	2 00	27 00	
Siskiyou	8,074 00	7,416 00	6 00	312 00	340 00
Solano	8,661 00	8,156 00	5 00		500 00
Sonoma	10,873 50	10,604 00	9 50		260 00
Stanislaus	4,837 50	4,760 00	7 50	15 00	55 00
Sutter	1,039 00	988 00	1 00		50 00
Tehama	2,598 00	2,590 00	2 00	6 00	
Trinity	776 50	762 00	50	9 00	5 00
Tulare	6,621 00	6,476 00	2 00	63 00	80 00
Tuolumne	3,070 50	3,038 00	1 50	6 00	25 00
Ventura	2,803 00	2,798 00			5 00
Yolo	2,136 00	2,050 00	6 00	15 00	65 00
Yuba	2,509 50	2,368 00	1 50	15 00	125 00
Totals	$457,373 50	$438,626 00	$376 50	$6,906 00	$11,465 00
Number	224,661	219,313	753	2,302	2,293

HUNTING LICENSE SALES, SERIES 1934-1935

Counties	Total	Citizen	Junior citizen	Duplicate	Non-resident	Alien	Declarant alien
Alameda	$14,733 50	$14,086 00	$537 00	$0 50		$50 00	$60 00
Alpine	185 00	132 00	3 00		$50 00		
Amador	1,624 00	1,530 00	83 00	1 00			10 00
Butte	6,584 00	6,174 00	408 00	2 00			
Calaveras	1,118 50	1,064 00	54 00	50			
Colusa	2,725 00	2,454 00	246 00	5 00	20 00		
Contra Costa	5,213 00	4,924 00	216 00	3 00		50 00	20 00
Del Norte	924 50	856 00	47 00	1 50	10 00		10 00
El Dorado	2,168 00	2,078 00	77 00	3 00	10 00		
Fresno	14,446 00	13,490 00	891 00	5 00			60 00
Glenn	2,668 50	2,394 00	225 00	4 50	20 00	25 00	
Humboldt	8,227 00	7,618 00	369 00	5 00		125 00	110 00
Imperial	2,336 00	2,186 00	150 00				
Inyo	1,768 50	1,680 00	77 00	1 50			10 00
Kern	9,634 50	9,186 00	448 00	50			
Kings	2,016 50	1,900 00	116 00	50			
Lake	2,528 50	2,340 00	158 00	50	30 00		
Lassen	3,473 00	3,112 00	162 00	4 00	110 00	25 00	60 00
Los Angeles	59,178 00	56,432 00	2,346 00	35 00	80 00	125 00	160 00
Madera	1,688 50	1,586 00	92 00	50			10 00
Marin	2,747 00	2,604 00	143 00				
Mariposa	533 00	500 00	32 00	1 00			
Mendocino	5,172 00	4,834 00	275 00	3 00	10 00		50 00
Merced	4,434 50	4,018 00	367 00	4 50		25 00	20 00
Modoc	4,030 00	3,268 00	202 00		560 00		
Mono	1,308 00	724 00	4 00		580 00		
Monterey	7,154 50	6,520 00	420 00	9 50	10 00	75 00	120 00
Napa	4,258 50	3,800 00	301 00	7 50	20 00	50 00	80 00
Nevada	3,473 00	2,834 00	122 00	2 00	410 00	25 00	80 00
Orange	4,712 00	4,458 00	253 00	1 00			
Placer	4,086 50	3,672 00	337 00	2 50		25 00	50 00
Plumas	2,903 50	2,688 00	110 00	50	70 00	25 00	10 00
Riverside	4,556 00	4,314 00	242 00				
Sacramento	12,078 50	11,092 00	590 00	26 50	30 00	200 00	140 00
San Benito	2,042 00	1,746 00	274 00	2 00			20 00
San Bernardino	5,176 50	4,960 00	215 00	1 50			
San Diego	8,142 00	7,622 00	496 00	4 00	20 00		
San Francisco	20,634 50	19,218 00	463 00	33 50	70 00	300 00	550 00
San Joaquin	8,975 50	8,404 00	480 00	1 50		50 00	40 00
San Luis Obispo	5,296 50	4,852 00	397 00	2 50		25 00	20 00
San Mateo	3,571 00	3,320 00	204 00	2 00		25 00	20 00
Santa Barbara	6,745 00	6,172 00	468 00			75 00	30 00
Santa Clara	10,130 50	9,340 00	630 00	5 50	20 00	25 00	110 00
Santa Cruz	3,802 50	3,260 00	366 00	6 50		50 00	120 00
Shasta	4,345 50	4,096 00	186 00	3 50	30 00		30 00
Sierra	621 00	600 00	21 00				
Siskiyou	10,351 50	6,938 00	374 00	9 50	2,830 00		200 00
Solano	4,272 50	4,060 00	202 00	50			10 00
Sonoma	9,477 50	8,638 00	633 00	6 50		100 00	100 00
Stanislaus	6,006 50	5,550 00	391 00	5 50		50 00	10 00
Sutter	1,105 50	1,036 00	69 00	50			
Tehama	3,166 50	3,040 00	123 00	3 50			
Trinity	650 50	628 00	22 00	50			
Tulare	7,421 50	6,908 00	502 00	1 50	10 00		
Tuolumne	1,534 00	1,488 00	46 00				
Ventura	3,593 00	3,350 00	243 00				
Yolo	3,435 00	3,182 00	235 00	8 00			10 00
Yuba	3,354 50	3,098 00	232 00	4 50			20 00
Totals	$338,538 50	$312,054 00	$17,375 00	$234 50	$5,000 00	$1,525 00	$2,350 00
Number	174,667	156,027	17,375	469	500	61	235

DEER TAG LICENSE SALES BY COUNTIES, YEAR 1935

County	1934	1935
Alameda	$4,439 00	$4,481 00
Alpine	68 00	52 00
Amador	620 00	628 00
Butte	2,440 00	2,470 00
Calaveras	471 00	468 00
Colusa	1,011 00	1,021 00
Contra Costa	1,418 00	1,511 00
Del Norte	329 00	348 00
El Dorado	1,001 00	1,134 00
Fresno	3,961 00	3,632 00
Glenn	1,006 00	1,083 00
Humboldt	3,429 00	3,367 00
Imperial	228 00	192 00
Inyo	806 00	704 00
Kern	3,184 00	3,255 00
Kings	427 00	508 00
Lake	1,223 00	1,218 00
Lassen	1,570 00	1,833 00
Los Angeles	15,728 00	16,071 00
Madera	562 00	632 00
Marin	1,051 00	970 00
Mariposa	234 00	240 00
Mendocino	2,507 00	2,703 00
Merced	1,005 00	962 00
Modoc	1,532 00	1,376 00
Mono	370 00	515 00
Monterey	2,489 00	2,571 00
Napa	1,813 00	1,613 00
Nevada	1,318 00	1,440 00
Orange	1,385 00	1,336 00
Placer	1,547 00	1,534 00
Plumas	1,435 00	1,603 00
Riverside	1,452 00	1,567 00
Sacramento	3,142 00	3,244 00
San Benito	810 00	729 00
San Bernardino	1,643 00	1,737 00
San Diego	1,785 00	1,748 00
San Francisco	5,348 00	5,547 00
San Joaquin	2,169 00	2,126 00
San Luis Obispo	1,914 00	2,069 00
San Mateo	971 00	1,033 00
Santa Barbara	2,424 00	2,357 00
Santa Clara	3,486 00	3,354 00
Santa Cruz	1,581 00	1,751 00
Shasta	1,963 00	2,066 00
Sierra	317 00	322 00
Siskiyou	3,604 00	4,113 00
Solano	1,416 00	1,359 00
Sonoma	3,967 00	3,884 00
Stanislaus	1,452 00	1,262 00
Sutter	305 00	297 00
Tehama	1,434 00	1,389 00
Trinity	314 00	371 00
Tulare	2,407 00	2,434 00
Tuolumne	647 00	665 00
Ventura	1,388 00	1,451 00
Yolo	1,284 00	827 00
Yuba	1,093 00	1,635 00
Total Sales	$108,923 00	$110,808 00

MARKET FISHERMEN'S LICENSE SALES

Total sales, license year April 1, 1934, to March 31, 1935	$53,230 00
Total sales, license year April 1, 1935, to March 31, 1936	60,070 00

License fee: All persons, $10.

TRAPPING LICENSE SALES

Total sales, license year July 1, 1934, to June 30, 1935	$1,681 00
Total sales, license year July 1, 1935, to June 30, 1936	1,532 00

License fee: Citizens, $1; Aliens, $2.

FISH PACKERS' AND WHOLESALE SHELL-FISH DEALERS' LICENSE SALES

Total sales, license year July 1, 1934, to June 30, 1935	$930 00
Total sales, license year July 1, 1935, to June 30, 1936	1,040 00

License fee: Citizens, $5; Aliens, $20.

GAME BREEDERS' LICENSE SALES

Total sales, license year January 1, 1934, to December 31, 1934	$1,085 00
Total sales, license year January 1, 1935, to December 31, 1935	1,137 50

License fee: All persons, $2.50.

FISH BREEDERS' LICENSE SALES

Total sales, license year January 1, 1934, to December 31, 1934	$390 00
Total sales, license year January 1, 1935, to December 31, 1935	355 00

License fee: All persons, $5.

DOMESTICATED FISH IMPORTERS' LICENSE SALES

Total sales, license year January 1, 1934, to December 31, 1934	$95 00
Total sales, license year January 1, 1935, to December 31, 1935	95 00

License fee: All persons, $5.

KELP LICENSE SALES

Total sales, year 1934	$70 00
Total sales, year 1935	40 00

License for term of one year from date of issuance. Fee, $10.

COMMERCIAL HUNTING GUN CLUB LICENSE SALES

Total sales, year July 1, 1934, to June 30, 1935	$1,225 00
Total sales, year July 1, 1935, to June 30 1936	950 00

License fee: Citizens, $25; Aliens, $100.

COMMERCIAL HUNTING CLUB OPERATORS' LICENSE SALES

Total sales, year July 1, 1934, to June 30, 1935	$265 00
Total sales, year July 1, 1935, to June 30, 1936	215 00

License fee: Citizens, $5; Aliens, $25.

ARRESTS AND CONVICTIONS

RECAPITULATION

	Number of arrests	Fines imposed	Jail sentences (days)
Fish cases, 1934-1935	1,145	$19,926 50	2,215
Game cases, 1934-1935	1,004	24,864 50	3,958½
Totals, 1934-1935	2,149	$44,791 00	6,173½
Fish cases, 1935-1936	1,316	$23,031 00	1,947½
Game cases, 1935-1936	1,070	25,211 49	6,841
Totals 1935-1936	2,386	$48,242 49	8,788½
Recapitulation:—			
1934-1935	2,149	$44,791 00	6,173½
1935-1936	2,386	48,242 49	8,788½
Totals	4,535	$93,033 49	14,962

TOTAL ARRESTS FOR A PERIOD OF THIRTY-FOUR YEARS

1902-1904	550
1904-1906	774
1906-1908	1,192
1908-1910	1,771
1910-1912	2,063
1912-1914	1,993
1914-1916	2,087
1916-1918	1,797
1918-1920	1,891
1920-1922	2,258
1922-1924	2,715
1924-1926	3,207
1926-1928	4,390
1928-1930	5,388
1930-1932	5,237
1932-1934	3,795
1934-1936	4,535

SEIZURES OF FISH AND GAME

	July 1, 1934, to June 30, 1935	July 1, 1935, to June 30, 1936	Total
Abalone	1,134	1,246	2,380
Abalone, pounds	2,016	50	2,066
Abalone slices		1	1
Angling license		1	1
Barracuda		3	3
Barracuda, pounds	510	5,267½	5,777½
Bass:—			
Black	54	145	199
Black, pounds		5½	5½
Rock		1	1
Striped	722	601	1,323
Striped, pounds	463	557	1,020
White sea, pounds		1,150	1,150
Carp		20	20
Catfish, pounds	204	1,275	1,479
Caviar, pounds	24		24
Clams	9,367	6,820	16,187
Cockles		2,100	2,100
Cockles, pounds	427		427
Crabs	209	70	279
Crabs (cooked)		240	240
Crappie, perch, sunfish	588	961	1,549
Croker, yellowfin		40	40
Fish traps	9		9
Halibut, pounds	1,400	400	1,800
Live car		2	2
Lobsters	1,415	1,107	2,522
Lobsters, pounds	1,988	75	2,063
Lobster receivers		2	2
Lobster traps	70	197	267
Mullett, pounds		157	157
Mussels, pounds		100	100
Nets, seines	3		3
Perch, pounds	506		506
Salmon	1	31	32
Salmon, pounds	236	1,775	2,011
Shad, pounds	100	30	130
Skeins of fresh trout roe		2	2
Spears		2	2
Spotfin croaker	1		1
Sturgeon, pounds	100		100
Trout, steelhead	1,604	1,116	2,720
Trout, pounds	4,422	311½	4,733½
Tuna, pounds		7,636	7,636
Yellowfin, pounds	334		334
Yellowtail, pounds	264		264
Bear hide	1		1
Bear meat, pounds	1		1
Bird nets	3		3
Deer	99	57	156
Deer feet		6	6
Deer head		1	1
Deer hides	12	22	34
Deer meat		4 quart jars	4 quart jars
Deer meat, pounds	3,944	5,370	9,314
Deer tags		2	2
Doves	749	1,058	1,807
Ducks, geese, mudhens	785	584	1,369
Egret		26	26
Frogs	33		33
Godwit, marbled		2	2
Grebe		1	1
Hunting license		2	2
House linnets, pounds	36		36
Larks, horned		3	3
Meadowlark		10	10
Mt. sheep horns, set	1		1
Non-game birds	64	54	118
Owl		1	1
Pheasants	49	58	107
Pigeons	37	1	38
Plover		8	8
Quail	214	242	456
Rabbits	36	90	126
Robins		16	16
Shorebirds	22	8	30
Sparrow		1	1
Squirrels		4	4
Swan	1	3	4
Snipe		33	33
Tree squirrels	4		4

GAME CASES

Offense	July 1, 1934, to June 30, 1935			July 1, 1935, to June 30, 1936		
	Arrests	Fines	Jail	Arrests	Fines	Jail
			Days			Days
Bear; closed season	3		10	1		75
Bird nets; illegal	2	$15 00				
Deer; closed season; killing does, fawns, spike bucks; evidence of sex removed; failure to tag; tags altered, mutilated	328	9,512 00	2,848½	354	$11,160 00	3,757½
Doves; closed season	39	1,744 00	200	57	1,295 00	110
Ducks, geese, mudhens; closed season; overlimit; sale	95	3,827 50	31	58	2,790 00	300
Firearms; in refuge; illegal possession of	5	75 00		46	606 00	39½
Grouse; closed season	1	10 00				
Hunting; no license; illegal license; false statement	204	2,500 50	399½	275	3,746 00	1,549½
Hunting; in game refuge	31	390 00	10			
Illegal shooting	34	420 00		26	450 00	
Night hunting	47	747 50	165	5	65 00	
Non-game birds; killing of; possession of	32	820 00		45	585 00	32½
Pheasant; closed season; snaring; possession untagged	45	1,372 50	12½	48	1,120 00	260
Pigeon; closed season	5	75 00		6	70 00	12½
Quail; closed season; using for bait	37	1,355 00	75	47	1,637 50	76
Rabbits; closed season; netting of	20	306 00	27	28	390 00	
Shorebirds; killing of	14	300 00		2	105 00	
Spotlight hunting	38	1,025 00	180	39	725 00	252
Swan; killing of	1	12 50				
Trapping; no license				3	70 00	
Tree squirrels; closed season; killing of	2	150 00				
Trespassing on posted land	9	47 00				
Miscellaneous game cases	11	60 00		27	296 99	376½
Totals	1,003	$24,764 50	3,958½	1,067	$25,111 49	6,841

FISH CASES

Abalones; drying of; overlimit; undersize; taken below high water line	107	$2,498 50	408½	165	$3,290 00	50
Angling; no license	141	1,673 00	167½	116	1,186 50	107
Barracuda; closed season; selling undersize	9	75 00		12	305 00	
Bass—						
Black; closed season; undersize	15	202 50	1	13	307 50	160
Striped; illegal shipment of; offering for sale; undersize	68	1,567 50	360	97	2,079 00	402
White sea; undersize				1	100 00	
Catfish; closed season; undersize sold; keeping undersize in live car; failing to keep dealer's record	4	60 00		2	10 00	
Clams; overlimit; undersize; taken in clam refuge	244	3,885 00	479½	199	3,070 00	702½
Cockles; overlimit; undersize	6	130 00	12½	3	75 00	
Commercial fishing; no license; no reports	147	631 00	79	138	990 00	40
Crabs; female; undersize; shipping in from closed district	3	10 00		41	700 00	20
Crappie, perch; overlimit; closed season	51	755 00	30	16	270 00	
Fish wastage				5	255 00	
Fishing; from dam; near fishway; closed stream	50	577 50	14½	169	2,590 50	203½
Halibut; undersize	1					
Illegal fishing apparatus	23	473 00	6	35	545 00	35
Lobsters; closed season; undersize; taken in traps	46	435 00	172	15	265 00	12½
Mussels; taken in refuge				2		20
Night fishing	45	405 00	36	47	559 00	30½
Pollution	17	600 00		14	550 00	
Salmon; illegal taking of; closed season; clubbing; failure to stamp cans	11	200 00		18	325 00	
Sardines; illegal use of				4	215 00	
Seines and nets; illegal use of	44	3,810 00	335	85	3,465 00	92½
Sturgeon; possession of	4					
Trout; clubbing; dynamiting; overlimit; closed season; spearing	67	1,128 50	71	91	1,636 00	42
Yellowfin; undersize	2	75 00				
Yellowtail; closed season; selling local to cannery	8	170 00		2		
Miscellaneous fish cases	33	665 00	42½	27	342 50	30
Totals	1,146	$20,026 50	2,215	1,317	$23,131 00	1,947½

GAME RECORD 1934

Ducks		*Geese*		*Rabbits*		*Coyotes*	
Colusa	27,767	Colusa	5,001	Los. Ang.	19,570	Monterey	1,419
Merced	19,176	Butte	4,028	Riverside	13,992	Modoc	711
S. Joaquin	17,787	Siskiyou	3,214	Monterey	11,766	Fresno	440
Solano	16,950	Glenn	2,418	S. Diego	11,650	Tulare	335
Butte	16,090	Sutter	2,286	S. Bernard.	10,783	S. L. Obispo	329
Sutter	13,459	Modoc	1,960	S. Cruz	9,160	Kern	325
Alameda	13,290	Yolo	1,496	S. L. Obispo	8,843	Shasta	324
Glenn	8,907	Merced	951	San Mateo	8,595	Plumas	317
C. Costa	8,567	S. Joaquin	626	Ventura	7,688	Los. Ang.	247
S. Diego	8,405	Sacramento	563	Orange	6,945	S. Clara	241
Siskiyou	7,364	Shasta	538	Alameda	4,916	Tehama	239
Yolo	7,092	Yuba	477	Fresno	4,637	S. Benito	226
Kern	6,973	Lassen	458	S. Barbara	4,601	S. Joaquin	223
Humboldt	6,821	Fresno	387	Sacramento	4,483	S. Diego	202
Monterey	6,683	Tehama	373	Kern	4,113	Madera	196
Imperial	6,091	Solano	357	S. Joaquin	3,978	Siskiyou	193
Sacramento	5,665	Imperial	282	S. Clara	3,834	Calaveras	183
Fresno	5,096	Stanislaus	229	Placer	3,365	Lake	178
Los Ang.	4,927	S. L. Obispo	212	S. Benito	3,137	Butte	168
Modoc	4,656	Marin	205	Sonoma	3,003	Ventura	159
Ventura	4,589	Humboldt	196	Marin	2,038	Napa	157
S. Clara	4,548	Madera	187	Kings	2,037	Glenn	157
Orange	4,498	C. Costa	169	Tulare	1,648	Lassen	153
Stanislaus	4,301	Lake	160	Yolo	1,526	S. Bernard.	149
Marin	4,144	Riverside	155	C. Costa	1,415	Kings	146
Sonoma	3,953	Plumas	151	Stanislaus	1,180	Alameda	145
S. Mateo	3,168	Mendocino	136	Napa	1,168	Sierra	138
Yuba	3,129	Kern	120	Madera	1,159	S. Barbara	137
Riverside	2,968	Alameda	118	Humboldt	1,140	Merced	132
S. L. Obispo	2,534	Monterey	115	Imperial	1,087	Orange	123
Shasta	2,487	Sonoma	82	Butte	1,042	Colusa	119
Madera	2,431	Kings	78	Merced	1,037	Riverside	117
Lassen	2,353	S. Clara	62	Modoc	1,036	El Dorado	114
Mendocino	1,831	Placer	61	Plumas	983	Placer	112
S. Bernard.	1,713	Tulare	60	Mendocino	966	Mono	107
Tulare	1,682	Ventura	49	Siskiyou	963	Tuolumne	107
S. Barbara	1,570	Orange	43	Lake	858	Yuba	90
Napa	1,511	S. Bernard.	42	Tehama	601	San Mateo	71
Plumas	1,356	S. Mateo	41	Amador	578	Inyo	66
Lake	1,191	S. Benito	35	Lassen	558	Sutter	57
S. Cruz	1,018	S. Barbara	34	El Dorado	552	Mariposa	52
Kings	957	Inyo	31	Nevada	465	Trinity	45
Tehama	892	Napa	28	Yuba	432	Humboldt	45
Inyo	801	Los Ang.	26	Shasta	417	Nevada	39
Mono	662	S. Diego	25	Calaveras	373	Amador	38
Placer	543	Del Norte	23	Solano	369	S. Cruz	29
S. Benito	408	Nevada	22	Sierra	354	Yolo	29
El Dorado	414	Trinity	22	Colusa	351	Stanislaus	25
Sierra	318	Mariposa	18	Inyo	346	Marin	24
Del Norte	275	Calaveras	18	Sutter	323	Sacramento	20
S. Francisco	224	S. Cruz	17	Glenn	238	Mendocino	16
Nevada	165	El Dorado	14	Mariposa	206	Alpine	14
Alpine	126	Mono	13	Tuolumne	179	Sonoma	8
Trinity	86	Amador	11	S. Francisco	116	Imperial	8
Amador	80	Sierra	5	Del Norte	44	Del Norte	4
Mariposa	52	County not given	11,850	Trinity	37	C. Costa	4
Calaveras	47			Mono	32	Solano	1
Tuolumne	17			Alpine	24	County not given	4,806
County not given	114,434			County not given	74,954		
Total	389,242	Total	40,278	Total	251,891	Total	14,259

Game Records, 1934—Continued

Quail

Fresno	44,322
Monterey	38,847
S. L. Obispo	22,493
Sonoma	16,203
S. Joaquin	15,944
Tulare	15,782
Alameda	13,602
S. Cruz	12,907
Sacramento	11,952
S. Clara	11,935
S. Barbara	11,314
Butte	11,249
Kern	11,004
Placer	10,762
Kings	8,899
S. Benito	8,790
Napa	8,553
Tehama	7,870
Lake	7,850
Humboldt	7,479
Madera	7,260
Mendocino	7,185
Marin	6,587
El Dorado	5,865
Yuba	5,730
Yolo	4,966
Modoc	4,798
S. Mateo	4,672
Stanislaus	4,610
Siskiyou	4,381
Shasta	3,507
C. Costa	3,468
Sutter	3,336
Mariposa	3,303
Calaveras	3,020
Glenn	2,937
Amador	2,894
Colusa	2,356
Nevada	2,153
Merced	2,095
Los Ang.	1,650
Riverside	1,457
S. Diego	1,294
Solano	1,073
Ventura	989
Plumas	873
Lassen	771
Orange	770
S. Bernard.	691
Tuolumne	685
Imperial	572
Sierra	417
Trinity	410
Alpine	191
Inyo	162
Mono	154
S. Francisco	23
Del Norte	3
County not given	165,416
Total	560,481

Doves

Fresno	49,639
Tulare	25,702
Imperial	21,422
S. Joaquin	21,597
S. L. Obispo	21,414
Monterey	20,943
Los Ang.	16,392
Kern	15,689
Kings	13,944
Sacramento	12,344
Riverside	11,599
Butte	9,925
Yolo	9,478
Orange	8,820
S. Diego	7,950
Madera	7,813
Stanislaus	7,395
S. Barbara	7,002
S. Bernard.	6,987
Tehama	6,796
Lake	6,764
Merced	6,492
Yuba	6,331
Sutter	6,160
Napa	5,757
S. Clara	5,718
Placer	5,453
Colusa	5,401
Ventura	5,000
Sonoma	4,816
Glenn	4,604
Alameda	4,338
S. Benito	3,957
S. Cruz	3,402
Amador	3,022
Shasta	2,957
Modoc	1,993
C. Costa	1,960
Calaveras	1,862
Siskiyou	1,707
El Dorado	1,548
Inyo	1,544
S. Mateo	1,303
Solano	1,181
Mariposa	1,079
Lassen	954
Mendocino	934
Nevada	841
Plumas	768
Sierra	671
Marin	527
Tuolumne	489
Trinity	220
Alpine	95
Humboldt	63
Del Norte	35
Mono	32
S. Francisco	15
County not given	77,266
Total	580,110

Pigeons

Monterey	21,961
S. Cruz	5,849
S. L. Obispo	1,216
S. Clara	1,075
Calaveras	567
Tulare	528
S. Barbara	520
Los Ang.	515
Sonoma	512
Fresno	506
S. Mateo	501
Amador	455
S. Benito	399
Butte	337
Kern	315
Ventura	280
Placer	276
Yuba	258
Modoc	230
Yolo	180
S. Joaquin	177
Menodinco	172
Lake	168
S. Diego	163
Shasta	161
Stanislaus	160
Humboldt	153
Napa	146
Sacramento	145
Riverside	144
Alameda	143
Merced	136
Madera	117
El Dorado	72
Mariposa	61
Kings	55
Nevada	54
Plumas	52
Imperial	50
Colusa	48
Orange	47
Lassen	29
Marin	28
S. Bernard.	25
Glenn	23
Solano	22
Tehama	21
Trinity	17
C. Costa	16
Tuolumne	16
Sutter	6
Inyo	4
Sierra	4
County not given	11,941
Total	51,056

Pheasants

Butte	3,316
Sacramento	2,259
S. Joaquin	1,992
Yolo	1,862
Glenn	1,281
Sutter	1,092
Yuba	545
Siskiyou	447
Colusa	436
Shasta	412
S. Clara	359
Alameda	341
Stanislaus	319
Tehama	316
Napa	307
Tulare	299
C. Costa	299
Modoc	268
Fresno	245
Monterey	202
Inyo	197
Placer	163
Riverside	150
Solano	146
Lake	135
Merced	129
S. Bernard.	129
S. Cruz	119
Humboldt	110
S. L. Obispo	90
Los Ang.	71
Orange	67
Kern	64
Kings	58
Plumas	57
Mendocino	39
Lassen	38
S. Mateo	30
Ventura	28
Nevada	27
Sonoma	26
S. Benito	25
Madera	19
Marin	14
Mariposa	13
S. Barbara	13
Sierra	13
Trinity	11
Calaveras	9
El Dorado	8
Tuolumne	7
Mono	7
Imperial	7
Amador	7
Del Norte	4
Alpine	5
S. Francisco	3
S. Diego	2
County not given	6,583
Total	25,220

The Ten Leading Counties in the Take of Game, Season of 1934

San Joaquin	Ducks	Geese	Quail	Doves	Pheasants			
Monterey			Quail	Doves		Pigeon	Deer	Rabbits
Los Angeles				Doves		Pigeon	Deer	Rabbits
Sacramento		Geese	Quail	Doves	Pheasants			
San Luis Obispo			Quail	Doves		Pigeon		Rabbits
Fresno			Quail	Doves		Pigeon	Deer	
Tulare			Quail	Doves		Pigeon	Deer	
Colusa	Ducks	Geese			Pheasants			
Butte	Ducks	Geese			Pheasants			
Sutter	Ducks	Geese			Pheasants			
Glenn	Ducks	Geese			Pheasants			
Siskiyou		Geese			Pheasants		Deer	
Santa Cruz			Quail			Pigeon		Rabbits
Merced	Ducks	Geese						
Alameda	Ducks		Quail					
Modoc		Geese					Deer	
Sonoma			Quail			Pigeon		
Santa Clara			Quail			Pigeon		
Solano	Ducks							
Contra Costa	Ducks							
San Diego	Ducks							Rabbits
Yolo		Geese						
Riverside								Rabbits
San Bernardino								Rabbits
San Mateo								Rabbits
Ventura								Rabbits
Orange								Rabbits
Imperial				Doves				
Kern				Doves				
Kings				Doves				
Calaveras						Pigeon		
Santa Barbara						Pigeon		
Yolo					Pheasants			
Yuba					Pheasants			
Shasta					Pheasants			
Mendocino							Deer	
Plumas							Deer	
Humboldt							Deer	
Tehama							Deer	

NINE-YEAR RECORD OF DEER KILL

COUNTY	1927	1928	1929	1930	1931	1932	1933	1934	1935
	Total	Total	Total	Total	Total	Total	Total	Total	Total
Alameda	220	263	275	252	248	164	148	204	268
Alpine	67	66	89	124	129	191	137	102	144
Amador	59	78	87	101	104	69	66	76	100
Butte	228	212	234	314	494	287	205	235	221
Calaveras	149	191	175	283	227	148	114	148	119
Colusa	263	272	297	343	304	198	220	168	177
Contra Costa	5	6	14	6	11	8	9	19	27
Del Norte	42	48	55	40	38	13	17	32	39
El Dorado	535	548	597	685	699	462	368	417	478
Fresno	592	763	764	893	952	882	888	1,359	1,259
Glenn	623	592	586	601	430	348	253	260	353
Humboldt	821	777	689	917	1,069	807	842	877	921
Imperial	1	4	4	1	-------	4	5	0	1
Inyo	173	239	253	251	211	180	297	285	301
Kern	218	295	297	324	354	196	266	251	203
Kings	3	3	3	12	10	13	5	6	8
Lake	901	1,038	841	885	726	524	481	419	570
Lassen	296	393	511	585	607	508	551	632	781
Los Angeles	435	369	691	637	949	819	572	750	800
Madera	260	300	313	379	442	316	268	310	360
Marin	367	444	394	403	449	376	301	341	328
Mariposa	95	134	144	235	190	134	100	160	121
Mendocino	1,475	1,468	1,355	1,483	1,706	1,273	1,234	1,185	1,207
Merced	67	68	48	68	60	45	45	60	26
Modoc	510	729	835	1,129	1,486	916	955	1,553	1,871
Mono	36	55	76	73	110	94	125	103	134
Monterey	757	830	734	864	900	484	631	736	702
Napa	442	569	523	536	488	304	285	288	278
Nevada	125	140	169	236	229	144	154	182	202
Orange	56	69	81	90	114	87	36	55	40
Placer	341	346	335	340	361	271	196	175	194
Plumas	551	586	695	764	968	829	917	1,128	1,144
Riverside	323	249	404	629	663	488	354	307	351
Sacramento	-------	2	-------	2	4	2	2	1	1
San Benito	217	320	269	313	275	152	172	214	160
San Bernardino	74	122	120	188	237	187	153	180	196
San Diego	169	232	233	250	334	263	173	259	237
San Francisco	-------	-------	-------	-------	-------	-------	-------	0	0
San Joaquin	21	14	22	22	24	15	14	17	11
San Luis Obispo	394	450	455	568	552	377	436	497	630
San Mateo	77	89	102	100	103	85	105	133	99
Santa Barbara	669	851	717	777	755	532	547	608	748
Santa Clara	397	536	577	650	697	415	393	421	463
Santa Cruz	78	92	102	115	127	85	108	108	81
Shasta	612	603	702	655	773	527	517	630	653
Sierra	101	102	132	137	190	151	158	179	210
Siskiyou	1,665	1,654	1,211	1,372	1,516	896	823	1,043	1,092
Solano	45	52	54	58	45	31	19	20	23
Sonoma	751	753	732	865	903	709	748	704	554
Stanislaus	91	115	119	111	94	37	37	39	39
Sutter	1	3	2	1	1	-------	-------	0	0
Tehama	799	846	758	845	715	487	569	866	813
Trinity	921	800	751	760	841	418	340	464	459
Tulare	744	939	807	965	890	725	625	836	924
Tuolumne	213	213	212	280	329	215	175	218	223
Ventura	274	362	346	308	390	317	408	398	465
Yolo	115	169	176	214	191	138	88	91	106
Yuba	53	52	55	93	91	34	31	56	40
Totals	19,507	21,515	21,222	24,132	25,805	18,380	17,686	20,805	21,955
Deer Tag License Sales	110,760	105,638	115,472	123,999	129,005	96,702	95,776	108,913	110,808

6—39139

CALIFORNIA FRESH FISHERY PRODUCTS FOR THE YEAR 1934

Species of fish	Del Norte, Humboldt	Mendocino, Sonoma, Lake	Marin	Solano, Yolo	Sacramento, San Joaquin	Alameda, Contra Costa	San Francisco, San Mateo	Santa Cruz	Monterey
Albacore									745
Anchovy							66,965	100	127,296
Barracuda								6	52
Bonito									
Cabrilla									
Carp		134,500		2,956	10,088	8,855	1,563		
Catfish		25,626		46	85,379	72,229			
Cultus	366,877	78,522					309,520	27,949	70,860
Flounder	193,253	9,430	17			575	306,493	26,102	1,390
Flying Fish									
Hake	507	1,565					47,293	7,687	
Halfmoon									
Halibut—California		3,373	239				25,867	24,610	11,259
Halibut—Northern	998,796	22,844							
Hardhead		134,900			12,362		106		
Herring	3,500		405,739			3,500	346,475		11,200
Kelp Bass									
Kingfish							14,027	33,448	210,637
Mackerel—Horse									138,547
Mackerel—Pacific							3,703	3,750	5,120,168
Mackerel—Spanish									
Mullet									
Perch	5,557	407	73,301				39,798	4,569	24,960
Pike				379	366	860			
Pompano								38	67
Ray									
Rock Bass									12
Rockfish	318,650	126,049					499,593	593,255	1,181,039
Sablefish	681,205	118,775					150,768	468,611	36,657
Salmon	2,403,573	490,152	40	89,683	164,727	147,257	818,812	85,633	200,597
Sand Dab	292,891	30,361					315,137	99,993	13,534
Sardine		10	385				135,475,965	350	478,923,076
Sculpin									
Sea Bass—Black								10	

Sea Bass—White			97			257	1,106		1,309
Shad				187,032	34,058	651,467	46		
Shark	155	6,850				93,755	5,421		400
Sheepshead									
Skate	5,148	5,065				163,613	25,535		13,474
Skipjack									
Smelt	26,055	8,678	17,261			2,060	51,207	37,524	117,703
Smelt—Jack	5,259		38,943			635	148,296	7,444	
Sole	2,996,248	655,251					3,861,187	886,935	40,851
Splittail		51,000			2,821	1,163			
Striped Bass				50,127	152,690	591,161	6,215		40
Sucker		61,050			1,983				
Swordfish—Broadbill									
Swordfish—Marlin									
Tom Cod	330						593		
Tuna—Bluefin									
Tuna—Yellowfin									
Turbot	1,140		1,188				55,043	13,967	355
Whitebait	55,109	22,929	1,128				6,400	107	19,174
Whitefish									
Yellowtail									
Miscellaneous	105,121	11,886	42		1,100	385	84,903	26,467	164
Total fish	8,459,374	1,999,223	538,380	330,223	465,574	1,480,147	142,893,554	2,380,663	486,265,566
Crustaceans:									
Crab	111,527	9,830	36			49,640	3,362,316	172,480	62,984
Shrimp			305,136			144,784	1,333,731		910
Spiny Lobster									
Mollusks:									
Abalone									2,786,775
Clam—Hardshell		10,615	47,217						
Clam—Mixed	41,293	3,053							
Clam—Pismo								1,007	18,191
Clam—Softshell	210	3,865	216,338			1,598			
Octopus	34	574				18	10,549	30	18,928
Oyster—Eastern and Japanese			120,180				398,420		50,240
Oyster—Native			41,338						
Squid								550	1,485,896
Miscellaneous:									
Frog					60				
Turtle									
Totals	8,612,438	2,027,160	1,268,625	330,223	465,634	1,676,187	147,998,570	2,554,730	490,689,490

All amounts shown in pounds unless otherwise specified. Skipjack and Albacore cleaned.

This report is, as far as practicable, the catch made in or off the districts shown in the table. In most cases the catch was landed in the district to which it was credited, but there are a few exceptions to this. For example: 1. The sardine catch taken by the San Francisco fleet is landed at plants in Alameda, Contra Costa and Solano counties but is credited to the San Francisco district. 2. The Monterey sardine fleet comes as far north as San Mateo and San Francisco counties but deliver to Monterey plants and this catch is credited to the Monterey district. The thought in making these exceptions is to keep the two fisheries separate, rather than combine part of the catch delivered to Monterey plants with the San Francisco catch.

CALIFORNIA FRESH FISHERY PRODUCTS FOR THE YEAR 1934—Continued

Species of fish	San Luis Obispo, Santa Barbara, Ventura	Los Angeles	Orange	San Diego	Total taken in state waters and off coast of California	From west coast south of the International Boundary brought into San Pedro	From west coast south of the International Boundary brought into San Diego	Total landings in California, including fish from west coast south of the International Boundary
Albacore	330	92,824	25,890	40	119,829			119,829
Anchovy		62,859	285		257,505			257,505
Barracuda	17,006	1,551,746	6,534	226,558	1,801,902	143,005	237,417	2,182,324
Bonito	40	1,989,661	11,337	1,002,675	3,003,713	34,271	164,710	3,202,694
Cabrilla						168,210	163,533	331,743
Carp		21,728	20		179,710			179,710
Catfish					183,280			183,280
Cultus	1,684	1,261	64		856,737	84		856,821
Flounder	55	1,221	215		538,751			538,751
Flying fish		26,437			26,437			26,437
Hake		241			57,293			57,293
Halfmoon	204	1,709	662		2,575			2,575
Halibut—California	221,020	270,489	39,941	53,009	649,807	102,204	286,288	1,038,299
Halibut—Northern					1,021,640			1,021,640
Hardhead					147,368			147,368
Herring	390	87		28,047	798,938		2,750	801,688
Kelp Bass		329		9,862	10,191		5	10,196
Kingfish	90	346,177	25,101	4,613	634,093			634,093
Mackerel—Horse		1,441,178		1,549	1,581,274			1,581,274
Mackerel—Pacific	23,955	95,549,037	1,515,765	11,302,832	113,519,210		266,198	113,785,408
Mackerel—Spanish						3,258	3,684	6,942
Mullet		698	3,067	14,339	18,104	951		19,055
Perch	8,834	62,608	51	505	220,590	51	278	220,919
Pike					1,605			1,605
Pompano		4,343	32		4,480	35		4,515
Ray		1,259	762	315	2,336			2,336
Rock Bass	6,672	158,089	52,463	105,652	322,888	23,589	55,698	402,175
Rockfish	282,311	997,151	129,192	285,572	4,412,812	12,896	182,744	4,608,452
Sablefish	10,906	403,864	229,704	1,275	2,101,765		1,168	2,102,933
Salmon					4,400,474			4,400,474
Sand Dab	140	6,580	8,389		767,025			767,025
Sardine	225	285,178,956	1,610	4,051,312	903,631,889		2,505	903,634,394
Sculpin	598	52,952	4,978	7,411	65,939			65,939

Sea Bass—Black	6,964	6,319	4,347	36,112	53,752	475,166	329,859	858,777
Sea Bass—White	46,378	350,467	3,050	65,422	468,086	122,821	259,521	850,428
Shad					872,603			872,603
Shark	25,318	159,056	200,586	29,022	520,563	1,065	4,574	526,202
Sheepshead	16,395	120,422	694	4,334	141,845	226	1,481	143,552
Skate	560	10,592	1,830	4,114	229,931			229,931
Skipjack						3,808,893	11,021,301	14,830,194
Smelt	17,436	207,683	6,295	28,154	520,056	132	1,338	521,526
Smelt—Jack	7,074	3,610		121	211,382			211,382
Sole	500,981	21,065	1,190	2,308	8,966,016		53	8,966,069
Splittail					54,984			54,984
Striped Bass					800,233			800,233
Sucker					63,033			63,033
Swordfish—Broadbill	14,162	168,635	10,191	64,829	257,817		6,061	263,878
Swordfish—Marlin	122	19,597	163	41,397	61,279	85	3,432	64,796
Tom Cod					923			923
Tuna—Bluefin	235	17,939,582	439	351,465	18,291,721	16,472	49,635	18,357,828
Tuna—Yellowfin		192		19,322	19,514	19,581,512	41,441,852	61,042,878
Turbot	852		2		72,547			72,547
Whitebait					104,847			104,847
Whitefish	2,699	28,953	87	15,916	47,655	18,118	27,418	93,191
Yellowtail	27	120,765	5,346	87,907	214,045	1,022,100	1,110,696	2,346,841
Miscellaneous	926	4,649	7,165	438	243,246	41,963	21,479	306,688
Total fish	1,214,589	407,385,071	2,297,447	17,846,427	1,073,556,238	25,577,107	55,645,678	1,154,779,023
Crustaceans:								
Crab		24,482			3,793,295			3,793,295
Shrimp		12			1,784,573			1,784,573
Spiny Lobster	104,343	157,489	34,114	70,705	366,651	111,096	704,956	1,182,703
Mollusks:								
Abalone	435,500	1,217			3,223,492			3,223,492
Clam—Hardshell		16,782	133	60	74,807			74,807
Clam—Mixed					44,346			44,346
Clam—Pismo	121,392				140,590			140,590
Clam—Softshell					222,011			222,011
Octopus		11	129		30,273			30,273
Oyster—Eastern and Japanese					568,840			568,840
Oyster—Native					41,338			41,338
Squid		39,355	328	4,321	1,530,450			1,530,450
Miscellaneous:								
Frog					60			60
Turtle						290	3,371	3,661
Totals	1,875,824	407,624,419	2,332,151	17,921,513	1,085,376,964	25,688,493	56,354,005	1,167,419,462

CALIFORNIA FRESH FISHERY PRODUCTS FOR YEAR 1935

Compiled by Division of Fish and Game, Bureau of Commercial Fisheries

Species of fish	Del Norte, Humboldt	Mendocino, Sonoma, Lake	Marin	Solano, Yolo	Sacramento, San Joaquin	Alameda, Contra Costa	San Francisco, San Mateo	Santa Cruz	Monterey
Albacore		19						94,505	588,937
Anchovy	22						74,550	100	76,255
Barracuda									
Bonito									345
Cabrilla									
Carp		73,865		3,762	13,933	12,602			
Catfish		24,463		568	133,557	131,036			
Cultus	361,079	196,726					342,894	35,830	70,841
Flounder	125,941	41,015				150	477,519	10,497	981
Flying Fish									
Hake	330	4,526					57,971	5,687	
Halibut—California		2,461	62				16,684	22,042	19,880
Halibut—Northern	825,673	41,582							
Hardhead		65,465			12,579		340,105	30	47,250
Herring	7,635		451,985						
Kelp Bass							13,043	65,511	184,915
Kingfish									146,428
Mackerel—Horse							16,265	1,827	5,470,226
Mackerel—Pacific		7							
Mackerel—Spanish									
Mullet							40,422	8,092	31,297
Perch	9,640	201	91,737						
Pike				335	214	1,082		123	116
Pompano									
Rock Bass							471,004	670,411	1,523,737
Rockfish	351,908	176,886	435				105,967	516,535	44,092
Sablefish	939,831	689,901					337,751	81,193	138,507
Salmon	2,735,838	1,170,890		378,056	170,948	339,884	357,958	36,892	37,637
Sand Dab	163,434	66,685					147,257,438		376,150,587
Sardine	500								
Sculpin									

Sea Bass—Black								12	
Sea Bass—White			266				141	869	281
Shad				264,796	47,877	1,289,364	165	30	27
Shark	220	9,300					141,785	8,465	350
Sheepshead									
Skate	3,167	22,915					218,124	11,208	21,432
Skipjack									
Smelt	23,270	3,716	4,449			2,618	57,830	32,221	166,819
Smelt—Jack	132		55,433				200,315	13,983	
Sole	2,148,903	1,317,086					4,567,330	487,080	131,794
Splittail		27,207			8,061	2,297			
Striped Bass				34,507	78,912	385,257	3,389		
Sucker		40,675			3,677	16			
Swordfish—Broadbill									
Swordfish—Marlin									
Tom Cod	270						415		
Tuna—Bluefin									
Tuna—Yellowfin									
Turbot	1,220	130	1,362				58,346	1,451	9,484
Whitebait	73,851	63,692	876				14,153	34	11,639
Whitefish									
Yellowtail									
Miscellaneous	81,577	29,410		15	1,879	85	103,640	18,115	620
Total fish	7,854,441	4,068,823	606,605	682,039	471,637	2,164,391	155,275,204	2,122,743	384,874,477
Crustaceans:									
Crab	158,906	4,972				20,038	3,468,848	17,128	9,552
Shrimp			872,899			326,533	2,245,408		2,351
Spiny Lobster									
Mollusks:									
Abalone		17,575	200						2,656,200
Clam—Hardshell	753	1,131	53,761						
Clam—Mixed	42,400	3,912						1,920	21,505
Clam—Pismo									
Clam—Softshell		1,883	128,242			2,997	20,283		
Mussel									
Octopus	1,010	992	35				23,763	3,562	51,800
Oyster—Eastern and Japanese			106,744				471,983		67,630
Oyster—Native			20,450						2,250
Squid								415	782,687
Miscellaneous							600		
Miscellaneous:									
Frog							20		
Turtle									
Totals	8,057,510	4,099,288	1,788,936	682,039	471,637	2,513,959	161,506,109	2,145,768	388,468,452

All amounts shown in pounds unless otherwise specified. Skipjack and Albacore cleaned.

CALIFORNIA FRESH FISH PRODUCTS FOR YEAR 1935—Continued

Species of fish	San Luis Obispo, Santa Barbara, Ventura	Los Angeles	Orange	San Diego	Total taken in state waters and off coast of California	From west coast south of the International Boundary brought into San Pedro	From west coast south of the International Boundary brought into San Diego	Total landings in California, including fish from west coast south of the International Boundary
Albacore	363	1,316,628	188,411	197,381	2,386,244	86	61,193	2,447,523
Anchovy		28,043			178,970			178,970
Barracuda	41,739	1,862,859	17,535	81,720	2,003,853	249,100	364,777	2,617,730
Bonito	1,011	969,133	328,618	964,633	2,263,740	4,310,964	1,321,780	7,896,484
Cabrilla						67,406	54,089	121,495
Carp		48,016			152,178			152,178
Catfish					289,624			289,624
Cultus	525	1,317	8	1,285	1,010,505		909	1,011,414
Flounder	10				656,113			656,113
Flying Fish		37,928			37,928			37,928
Hake		5,181	148		73,843			73,843
Halibut—California	239,964	330,437	34,604	144,932	811,066	239,957	525,615	1,576,638
Halibut—Northern		2,363			869,618			869,618
Hardhead					78,044			78,044
Herring	427			81,448	928,880			928,880
Kelp Bass				110	110		39	149
Kingfish		476,286	24,889	3,894	768,538		138	768,676
Mackerel—Horse	240	9,755,206	80,600	1,454	9,983,928			9,983,928
Mackerel—Pacific	42,633	127,644,667	3,986,119	8,104,554	145,266,298		1,160,904	146,427,202
Mackerel—Spanish						4,456	150	4,606
Mullet			538	13,186	13,724			13,724
Perch	4,491	90,592	669	1,230	278,371		3,027	281,398
Pike					1,631			1,631
Pompano		5,554	31		5,824			5,824
Rock Bass	13,724	118,358	31,691	166,229	330,002	4,986	29,417	364,405
Rockfish	391,657	764,459	59,894	171,622	4,582,013	11,459	235,029	4,828,501
Sablefish	3,608	334,607	184,538	7,572	2,826,651		7,630	2,834,281
Salmon		15			5,353,082			5,353,082
Sand Dab		5,491	7,500		675,597			675,597
Sardine	822	292,000,934	8	14,098,393	$29,508,682		3,866	829,512,548
Sculpin	528	52,745	8,886	5,649	67,808		1,741	69,549

Sea Bass—Black	2,425	7,666	1,987	5,133	17,223	405,579	207,961	630,763
Sea Bass—White	66,382	534,927	3,108	42,606	648,580	230,576	186,943	1,066,099
Shad					1,602,259			1,602,259
Shark	37,625	175,623	118,224	54,030	545,622	981	8,514	555,117
Sheepshead	24,318	156,988	2,789	2,781	186,876	354	792	188,022
Skate	3,447	6,322	2,600	13,751	302,966		4,156	307,122
Skipjack		58,544	297	1,849,075	1,907,916	3,103,878	11,837,480	16,849,274
Smelt	21,798	283,680	2,426	4,297	603,124	340	2,071	605,535
Smelt—Jack				14	269,877		25	269,902
Sole	593,359	3,367	4,062	1,146	9,164,118	75	70	9,164,263
Splittail					37,565			37,565
Striped Bass					502,065			502,065
Sucker					44,368			44,368
Swordfish—Broadbill	23,912	367,205	42,052	180,500	613,669	13,287	41,034	667,990
Swordfish—Marlin		13,267	890	4,261	18,418	510	134	19,062
Tom Cod					685			685
Tuna—Bluefin	502	17,823,139	15,527	656,645	18,495,813	5,872,192	805,078	25,173,083
Tuna—Yellowfin	11	37,047	4,960	486,898	528,916	19,949,074	51,195,786	71,673,776
Turbot	9	237	48		72,287			72,287
Whitebait					164,245			164,245
Whitefish	6,506	26,074	1,046	6,409	40,035	6,808	10,928	57,771
Yellowtail	19	449,710	16,502	116,333	582,564	1,772,840	5,792,689	8,148,093
Miscellaneous	649	3,737	2,066	3,350	245,143	21,806	9,967	276,916
Total fish	1,432,695	455,798,352	5,173,271	27,472,521	1,047,997,199	36,266,714	73,873,932	1,158,137,845
Crustaceans:								
Crab		12,674	143		3,692,261			3,692,261
Shrimp		259	1		3,447,442			3,447,442
Spiny Lobster	109,491	153,987	25,603	82,580	371,661	125,167	847,968	1,344,796
Mollusks:								
Abalone	1,195,975	963	8		3,870,921			3,870,921
Clam—Hardshell		24,959	491		81,095			81,095
Clam—Mixed		184			46,496			46,496
Clam—Pismo	158,574				181,999		14,225	196,224
Clam—Softshell					153,405			153,405
Mussel		10			10			10
Octopus	61		16		81,239			81,239
Oyster—Eastern and Japanese					646,357			646,357
Oyster—Native					22,700			22,700
Squid		32,842			815,944			815,944
Miscellaneous		485			1,085			1,085
Miscellaneous:								
Frog					20			20
Turtle							1,722	1,722
Totals	2,896,796	456,024,706	5,199,533	27,555,101	1,061,409,834	36,391,881	74,737,847	1,172,539,562

All amounts shown in pounds unless otherwise specified. Skipjack and Albacore cleaned.

CANNED, CURED AND MANUFACTURED FISHERY PRODUCTS OF CALIFORNIA FOR THE YEAR 1934

Canned

Kind of fish or fishery product	Size of cans	Northern California district, cases	Monterey district, cases	San Pedro district, cases	San Diego district, cases	Total cases
Albacore	4-lb. (12 to case)			739		739
	1-lb.			7,595		7,595
	½-lb.			71,903		71,903
	¼-lb.			1,945		1,945
Bonito	1-lb.			3,706	2,294	6,000
	½-lb.			28,821	14,448	43,269
	¼-lb.			1,385	53	1,438
	¼-lb. (100 to case)			1,333	514	1,847
Mackerel	1-lb.		55,466	942,507	115,654	1,113,627
	½-lb.		3,887	35,792	3,915	43,594
	½-lb. (72 to case)		1,730			1,730
	½-lb. (96 to case)			89,608	8,343	97,951
	12-oz.			1,138		1,138
	¼-lb.				45	45
Salmon	1-lb.	820				820
Sardine	10-lb. (6 to case)		12			12
	1-lb. oval		1,091,158	531,619		1,622,777
	1-lb. tall		48,769	119,506	10,146	178,421
	½-lb. oval		6,527			6,527
	½-lb. square		8,361			8,361
	¼-lb. square (100 to case)		721		195	916
	10-oz.		1,942			1,942
	9-oz. (70 to case)				122	122
	5-oz. (100 to case)		67,913	164,735		232,648
Shad roe	½-lb. oval	1,104				1,104
Squid	9-oz.		416			416
	½-lb.		3,841			3,841
Tuna, bluefin	4-lb. (12 to case)			199		199
	1-lb.			13,191	332	13,523
	½-lb.			260,755	5,413	266,168
	¼-lb.			44,870	1,118	45,988
	¼-lb. (100 to case)			6,335	198	6,533
Tuna, striped	1-lb.			3,557	8,133	11,690
	½-lb.			39,408	149,969	189,377
	¼-lb.			25,144	17,150	42,294
	¼-lb. (100 to case)			3,421	20,546	23,967
Tuna, yellowfin	4-lb. (12 to case)			1,260		1,260
	1-lb.			27,671	55,117	82,788
	½-lb.			237,237	607,006	844,243
	¼-lb.			35,673	107,043	142,716
	¼-lb. (100 to case)			10,915	10,900	21,815
	12-oz.			5,090		5,090
Tuna flakes and miscellaneous pack	1-lb.			2,779	754	3,533
	½-lb.			19,573	7,001	26,574
	¼-lb.			50	345	395
Tuna, "tonno" style	½-lb.			5,128		5,128
	¼-lb. (100 to case)			50,035		50,035
Yellowtail	1-lb.			310	1,145	1,455
	½-lb.			3,406	4,955	8,361
Pet food	Misc. sizes			80,224		80,224
Totals		1,924	1,290,743	2,878,563	1,152,854	5,324,084

NOTE—Forty-eight cans to the case unless otherwise specified. Sardines packed in Northern California included with Monterey.

CANNED, CURED AND MANUFACTURED FISHERY PRODUCTS OF CALIFORNIA FOR THE YEAR 1934—Continued

Salted, Smoked and Dried

Fishery product	Size or quantity	Northern California district	Monterey district	San Pedro district	San Diego district	Total
Herring, salted	Pounds	37,500				37,500
Herring, smoked	Pounds	72,550				72,550
Mixed fish, dried	Pounds	36,057				36,057
Mixed fish, salted	Pounds				158,056	158,056
Sablefish, salted	Pounds	3,000				3,000
Sablefish, smoked	Pounds	284,185				284,185
Salmon, mild cure	Tierces	1,624				1,624
Salmon, salted	Pounds	1,873				1,873
Salmon, smoked	Pounds	89,492				89,492
Sardine, salted	Pounds	1,200	168,356			169,556
Shad, mild cure	Tierces	64				64
Shrimp, dried	Pounds	110,301				110,301
Shrimp, meal	Pounds	297,568				297,568
Fish meal	Tons	11,138	34,492	27,236	4,858	77,724
Fish oil	Gallons	2,490,156	9,322,080	4,221,447	94,525	16,128,208

Miscellaneous Data

Estimated value of pack	$2,117,022	$6,046,825	$11,067,004	$5,616,405	$24,847,256
Number of employees	702	1,830	2,336	1,702	6,570
Value of plants	$1,142,029	$2,963,062	$2,068,195	$1,062,446	$7,235,732

CANNED, CURED AND MANUFACTURED FISHERY PRODUCTS OF CALIFORNIA FOR THE YEAR 1935

Canned

Kind of fish or fishery product	Size of cans	Northern California district, cases	Monterey district, cases	San Pedro district, cases	San Diego district, cases	Total cases
Abalone, minced	1-lb.		950			950
Abalone broth	1-lb.		450			450
Albacore	1-lb.			6,648	65	6,713
	½-lb.			99,009	4,583	103,592
	¼-lb.			1,045		1,045
	4-lb., 12's			799		799
Bonito	1-lb.			11,176	5,032	16,208
	½-lb.			71,697	31,929	103,626
	¼-lb.			4,811	24	4,835
	¼-lb., 100's			3,396		3,396
Mackerel	1-lb.		45,819	1,409,922	105,081	1,560,822
	½-lb.			17,846	2,479	20,325
	½-lb., 96's		207	186,798	3,196	190,201
Salmon	1-lb.	874				874
Sardine	1-lb. oval		1,126,466	615,808		1,742,274
	1-lb. tall		218,523	135,531	2,710	356,764
	½-lb.			12,475		12,475
	½-lb., 96's		34,920	13,044	8,727	56,691
	½-lb. oval		3,500			3,500
	½-lb. fillet		91,525			91,525
	½-lb. B. & P.		1,146			1,146
	5-oz., 100's		128,168	112,264		240,432
	¼-lb. B. & P.		2,375			2,375
	No. 10, 6's		2,226	251		2,477
	10½-oz.		23,103			23,103
Shad	1-lb.	5,039				5,039
Shad roe	½-lb.	2,269				2,269
Squid	9-oz.		4,075			4,075
	7-oz.		4,706			4,706
Tuna, bluefin	1-lb.			22,002	1,244	23,246
	½-lb.			292,366	22,601	314,967
	¼-lb.			64,637	298	64,935
	¼-lb., 100's			32,357	728	33,085
	4-lb., 12's			198		198
	12 oz.			2,070		2,070
Tuna, striped	1-lb.			1,273	7,819	9,092
	½-lb.			55,035	208,680	263,715
	¼-lb.			4,923	11,012	15,935
	¼-lb., 100's			27,515	22,236	49,751
Tuna, yellowfin	1-lb.			25,801	65,698	91,499
	½-lb.			243,219	784,881	1,028,100
	¼-lb.			28,798	94,574	123,372
	¼-lb., 100's			6,324	2,805	9,129
	4-lb., 12's			1,025	318	1,343
	12-oz.			1,035		1,035
Tuna flakes and miscellaneous pack	1-lb.			4,795	866	5,661
	½-lb.			28,960	6,840	35,800
	¼-lb.			154	43	197
Tuna, "tonno" style	½-lb.			7,177		7,177
	¼-lb., 100's			74,483	545	75,028
Yellowtail	1-lb.			2,792	10,088	12,880
	½-lb.			14,331	53,966	68,297
Pet food	Misc. sizes			122,826		122,826
Totals		8,182	1,688,159	3,766,616	1,459,068	6,922,025

NOTE.— Forty-eight cans to the case unless otherwise specified. Sardines packed in Northern California included with Monterey.

CANNED, CURED AND MANUFACTURED FISHERY PRODUCTS OF CALIFORNIA FOR THE YEAR 1935—Continued

Cured and Manufactured

Fishery product	Size or quantity	Northern California district	Monterey district	San Pedro district	San Diego district	Total
Herring, pickled	Pounds	10,100				10,100
Herring, salted	Pounds	82,200				82,200
Mackerel, smoked	Pounds			7,107		7,107
Mixed fish, dried	Pounds	86,157				86,157
Mixed fish, salted	Pounds				137,110	137,110
Sablefish, smoked	Pounds	334,417				334,417
Salmon, mild cure	Tierces	2,246				2,246
Salmon, salted	Pounds	9,600				9,600
Salmon, smoked	Pounds	117,893				117,893
Sardine, salted	Pounds		91,000			91,000
Shrimp, dried	Pounds	237,237				237,237
Shrimp meal	Pounds	479,550				479,550
Fish meal	Tons	12,994	27,966	31,163	6,572	78,695
Fish oil	Gallons	3,106,785	6,734,305	3,821,566	261,482	13,924,138

Miscellaneous Data

Estimated value of pack	$1,934,719	$6,960,442	$14,961,630	$7,063,449	$30,920,240
Number of employees	1,101	2,199	3,134	1,734	8,168
Value of plants	$1,822,624	$3,013,046	$2,156,169	$953,648	$7,945,487

REPORT OF SARDINE PLANTS, SEASON 1934-35

The season opened in Monterey and northern California on August 1st. However, as the price for sardines was not agreed on until August 11th no fish were brought in until August 13th (except a few tons received by one plant at Monterey from its own boats which started delivering on August 7th). In the San Pedro district the season opened on November 1st and fish were received on the opening day.

This report covers operations of shore plants only, and does not include sardines taken for fresh fish markets, bait, or quarter oil pack. During the season three floating reduction plants operated off the California coast, outside the jurisdiction of the State, and it is estimated that the floating plants took 128,190 tons of sardines. This amount added to the tonnage taken by shore plants makes a total of 608,936 tons of sardines taken off the coast of California during the season.

The following plants operated during the season:

MONTEREY AND NORTHERN CALIFORNIA DISTRICT

Benicia Fisheries, Benicia.
F. E. Booth Co., Inc., Monterey.
F. E. Booth Co., Inc., Pittsburg.
California Packing Corporation, Monterey.
Carmel Canning Company, Monterey.
Custom House Packing Corporation, Monterey.
Del Mar Canning Corporation, Monterey.
E. B. Gross Canning Co., Monterey.
Hovden Food Products Corporation, Monterey.
Monterey Canning Company, Monterey.
Old Capitol Land Company, Monterey.
Old Capitol Packers, Inc., Benicia.
Pittsburg Canners, Inc., Pittsburg.
Richmond Fisheries, Inc., Richmond.
San Carlos Canning Company, Monterey.
San Xavier Fish Packing Co., Monterey.
Sea Pride Packing Corporation, Ltd., Monterey.
Clayton L. Shaff, Monterey.
Union Fish Co. (Barge PERALTA), San Francisco.

SAN PEDRO DISTRICT

California Packing Corporation, Terminal Island.
Coast Fishing Co., Wilmington.
Franco-Italian Packing Co., Terminal Island.
French Sardine Co., Inc., Terminal Island.
Italian Food Products Co., Inc., Long Beach.
Seaboard Packing Corporation, Long Beach.
Sea Pride Packing Corporation, Ltd., Terminal Island.

Sea Pride Packing Corporation, Ltd., Wilmington.
Southern California Fish Corporation, Terminal Island.
Van Camp Sea Food Co., Inc., Terminal Island.

San Diego District

Point Loma Tuna Packers, Inc., Point Loma.
Westgate Sea Products Co., San Diego.

PRODUCTION OF SARDINE PLANTS

August 1, 1934, to March 31, 1935

District	Sardines received, tons	Used for canning, tons	Used for meal and oil, tons	Offal, tons
Monterey and Northern California	297,132	52,459	244,603	26,226
San Pedro	178,755	40,722	137,816	20,360
San Diego	4,859	605	4,254	303
Totals	480,746	[1]93,786	386,673	46,889
Deduct fish received for purposes other than canning	342,637			
Received by canning plants	138,109			

[1] The law requires that 13½ cases of 1-lb. oval cans or the equivalent be canned from each ton of sardines received for canning, but in figuring the amount actually used in canning, a basis of 20 cases per ton is used.

District	1-lb. ovals packed, cases	Other size cans packed, cases	Other size cans reduced to equivalents of 1-lb. ovals cases	Cases per ton
Monterey and Northern California	894,584	156,084	154,560	13.5
San Pedro	591,759	213,365	222,661	13.6
San Diego	----------	12,480	13,058	21.0
Totals	1,486,343	381,929	390,279	----------

District	Sardine meal, tons	Ratio per ton of meal	Sardine oil, gallons	Gallons of oil per ton of fish and offal	Fish used for purposes other than canning, tons
Monterey and Northern California	46,967	5.7	11,893,827	43.9	[2]219,454
San Pedro	29,836	5.3	4,865,486	30.7	[3]118,943
San Diego	848	5.3	111,252	24.7	[4]4,240
Totals	77,651	----------	16,870,565	----------	[5]342,637

[2] 219,373 tons for meal and oil under permit, 81 tons for salting.
[3] 118,726 tons for meal and oil under permit, 217 tons for pet food.
[4] 4,240 tons for meal and oil under permit.
[5] 342,339 tons for meal and oil under permit, 81 tons for salting, 217 tons for pet food.

SARDINE CATCH BY MONTHS, SEASON 1934-35

	Monterey and Northern California, tons	San Pedro tons	San Diego tons
August, 1934	22,500		
September	50,175		
October	72,380		
November	46,384	33,888	122
December	50,992	29,201	413
January, 1935	38,379	45,782	2,089
February	16,322	53,438	1,995
March		16,446	240
Totals	297,132	178,755	4,859

PACK OF 1-LB. OVALS BY MONTHS, SEASON 1934-35

	Monterey and Northern California, cases	San Pedro cases	San Diego cases
August, 1934	15,401		
September	101,905		
October	245,006		
November	198,478	92,760	
December	226,136	76,518	
January, 1935	83,425	162,503	
February	24,233	193,009	
March		66,969	
Totals	894,584	591,759	

PACK OF OTHER SIZE CANS REDUCED TO EQUIVALENTS OF 1-LB. OVALS BY MONTHS, SEASON 1934-35

	Monterey and Northern California, cases	San Pedro cases	San Diego cases
August, 1934	4,007		
September	11,938		
October	32,164		
November	23,423	26,391	2,770
December	27,226	24,093	3,414
January, 1935	33,534	63,720	2,560
February	22,268	65,394	4,314
March		43,063	
Totals	154,560	222,661	13,058

SARDINE MEAL PRODUCTION BY MONTHS, SEASON 1934-35

	Monterey and Northern California, tons	San Pedro tons	San Diego tons
August, 1934	3,563		
September	7,903		
October	11,080		
November	7,180	5,870	3
December	7,874	5,101	61
January, 1935	6,563	7,512	344
February	2,804	8,648	398
March		2,705	42
Totals	46,967	29,836	848

SARDINE OIL PRODUCTION BY MONTHS, SEASON 1934-35

	Monterey and Northern California, gallons	San Pedro gallons	San Diego gallons
August, 1934	1,086,570		
September	2,261,234		
October	2,904,963		
November	1,755,006	1,122,904	
December	1,950,204	932,279	7,695
January, 1935	1,446,361	1,220,181	40,957
February	489,489	1,311,249	58,306
March		278,873	4,294
Totals	11,893,827	4,865,486	111,252

REPORT OF SARDINE PLANTS, SEASON 1935–36

The season opened in Monterey and northern California on August 1st and small deliveries for canning purposes were made throughout the month. Permits for use of fish by a reduction process were not issued until September 1st, when rather heavy fishing was started. In southern California the season opened on November 1st and permits for use of fish by a reduction process were available on the same date. However, deliveries were light until the latter part of the month. Permits to take fish for use by a reduction proeess were not issued in Monterey and northern California after January 31st and in southern California after Mareh 15th.

This report covers operations of shore plants only and does not inelude sardines taken for fresh fish markets, bait or quarter-oil paek. During the season the floating reduetion ships *Lake Miraflores, Lansing, Santa Inez* and *Brookdale* operated off the coast of California outside the jurisdietion of the state, and it is estimated that the four floating plants took 158,754 tons of sardines. This amount added to the tonnage taken by the shore plants makes a total of 565,920 tons of sardines taken off the coast of California during the season.

The following plants operated during the season:

MONTEREY AND NORTHERN CALIFORNIA DISTRICT

Benicia Fisheries, Benieia.
F. E. Booth Co., Inc., Monterey.
F. E. Booth Co., Inc., Pittsburg.
California Paeking Corporation, Monterey.
Carmel Canning Company, Monterey.
Custom House Packing Corporation, Monterey.
Cypress Fisheries, Ine., Monterey.
Del Mar Canning Corporation, Monterey.
East Bay Fisheries, Inc., Richmond.
Edible Fish Meals & Oils, Inc., Riehmond.
Farallone Packing Company, San Franeisco.
Fish-Dee-Lish Corporation, Benicia.
Fish Packers, Ine., Benieia.
E. B. Gross Canning Company, Monterey.
Hofmann Packing Corporation, Benicia.
Hovden Food Products Corporation, Monterey.
Hovden Food Products Corporation, Moss Landing.
Monterey Canning Company, Monterey.
Old Capitol Land Company, Monterey.
Old Capitol Packers, Ine., Benieia.
Ozol Packing Company, Martinez.
Pittsburg Canners, Ine., Pittsburg.
Point Edith Fisheries, Ltd., Port Chieago.
Richmond Fisheries, Ine., Riehmond.

San Carlos Canning Company, Monterey.
San Xavier Fish Packing Company, Monterey.
Sea Pride Packing Corporation, Ltd., Monterey.
Union Fish Company (Barge *Peralta*), San Francisco.

SAN PEDRO DISTRICT

California Marine Curing & Packing Company, Terminal Island.
Certified Sea Foods Corporation, Newport Beach.
Coast Fishing Company, Wilmington.
Franco-Italian Packing Company, Inc., Terminal Island.
French Sardine Company, Inc., Terminal Island.
Italian Food Products Company, Inc., Long Beach.
Klampe & Martin, Terminal Island.
San Carlos Canning Company, Long Beach.
Sea Pride Packing Corporation, Ltd., Terminal Island.
Sea Pride Packing Corporation, Ltd., Wilmington.
Southern California Fish Corporation. Terminal Island.
Van Camp Sea Food Co., Inc., Terminal Island.

SAN DIEGO DISTRICT

American Fisheries Company, San Diego.
Point Loma Tuna Packers, Inc., Point Loma.
Westgate Sea Products Company, San Diego.

PRODUCTION OF SARDINE PLANTS

August 1, 1935, to March 31, 1936

District	Sardines received, tons	Used for canning, tons	Used for meal and oil, tons	Offal, tons
Monterey and Northern California	258,344	94,233	164,035	47,154
San Pedro	138,333	65,345	72,387	32,674
San Diego	10,489	990	9,499	495
Totals	407,166	[1]160,568	245,921	80,323
Deduct fish received for purposes other than canning	169,629			
Received by canning plants	237,537			

[1] The law requires that 13½ cases of 1-lb. oval cans be canned from each ton of sardines received for canning, but in figuring amount actually used in canning, a basis of 20 cases per ton is used.

District	1-lb. ovals packed, cases	Other size cans packed, cases	Other size cans reduced to equivalent of 1-lb. ovals, cases	Cases per ton
Monterey and Northern California	1,256,051	599,725	633,788	13.5
San Pedro	680,103	588,570	627,117	13.6
San Diego		17,047	19,856	13.8
Totals	1,936,154	1,205,342	1,280,761	

District	Sardine meal, tons	Ratio per ton of meal	Sardine oil, gallons	Gallons of oil per ton of fish and offal	Fish used for purposes other than canning, tons
Monterey and Northern California	38,537	5.5	10,050,658	47.5	[2]118,192
San Pedro	19,422	5.4	2,939,863	27.9	[3]42,384
San Diego	1,945	5.1	210,171	21.0	[4]9,053
Totals	59,904		13,200,692		[5]169,629

[2] 118,086 tons for meal and oil under permit, 106 tons for salting.
[3] 41,783 tons for meal and oil under permit, 590 tons for pet food, 11 tons for salting.
[4] 9,053 tons for meal and oil under permit.
[5] 168,922 tons for meal and oil under permit, 117 tons for salting, 590 tons for pet food.

SARDINE CATCH BY MONTHS, SEASON 1935-36

	Monterey and Northern California, tons	San Pedro, tons	San Diego, tons
August, 1935	4,266		
September	44,223		
October	51,630		
November	61,920	14,506	286
December	42,639	15,766	2,438
January, 1936	49,513	37,142	2,734
February	4,153	32,989	3,467
March		37,930	1,564
Totals	258,344	138,333	10,489

PACK OF 1-LB. OVALS BY MONTHS, SEASON 1935-36

	Monterey and Northern California, cases	San Pedro, cases	San Diego, cases
August, 1935	37,818		
September	224,733		
October	278,258		
November	316,788	81,395	
December	161,171	78,851	
January, 1936	200,270	153,641	
February	37,013	165,947	
March		200,269	
Totals	1,256,051	680,103	

PACK OF OTHER SIZE CANS REDUCED TO EQUIVALENTS OF 1-LB. OVALS BY MONTHS, SEASON 1935-36

	Monterey and Northern California, cases	San Pedro, cases	San Diego, cases
August, 1935	19,896		
September	114,209		
October	136,250		
November	138,083	48,374	2,032
December	85,147	60,092	3,410
January, 1936	115,687	160,402	3,568
February	24,516	159,446	3,584
March		198,803	7,262
Totals	633,788	627,117	19,856

SARDINE MEAL PRODUCTION BY MONTHS, SEASON 1935-36

	Monterey and Northern California, tons	San Pedro, tons	San Diego, tons
August, 1935	433		
September	6,145		
October	7,531		
November	9,172	2,102	48
December	6,897	2,312	427
January, 1936	7,728	5,406	527
February	631	4,546	683
March		5,056	260
Totals	38,537	19,422	1,945

SARDINE OIL PRODUCTION BY MONTHS, SEASON 1935-36

	Monterey and Northern California, gallons	San Pedro, gallons	San Diego, gallons
August, 1935	108,868		
September	1,662,310		
October	2,109,282		
November	2,528,336	342,102	5,980
December	1,698,246	306,852	50,221
January, 1936	1,829,859	864,948	58,280
February	113,757	769,429	77,451
March		656,532	18,239
Totals	10,050,658	2,939,863	210,171

COMPARATIVE STATEMENT OF SARDINE PLANT OPERATIONS, SEASONS 1934-35 AND 1935-36

Monterey and Northern California District

	Season 1934-35	Season 1935-36	Increase
Tons of sardines received for canning	77,678	140,152	62,474
Tons of sardines received under permit for meal and oil	219,373	118,086	*101,287
Tons of sardines received for salting, etc.	81	106	25
Total tons of sardines received for all purposes	297,132	258,344	*38,788
Cases of 1-lb. oval cans packed	894,584	1,256,051	361,467
Cases of other size cans packed	156,080	599,725	443,645
Other size cans reduced to equivalent cases of 1-lb. ovals	154,560	633,788	479,228
Meal, tons	46,967	38,537	*8,430
Oil, gallons	11,893,827	10,050,658	*1,843,169

*Decrease.

San Pedro District

	Season 1934-35	Season 1935-36	Increase
Tons of sardines received for canning	59,812	95,949	36,137
Tons of sardines received under permit for meal and oil	118,726	41,783	*76,943
Tons of sardines received for salting, pet food, etc.	217	601	384
Total tons of sardines received for all purposes	178,755	138,333	*40,422
Cases of 1-lb. oval cans packed	591,759	680,103	88,344
Cases of other size cans packed	213,365	588,570	375,205
Other size cans reduced to equivalent cases of 1-lb. ovals	222,661	627,117	404,456
Meal, tons	29,836	19,422	*10,414
Oil, gallons	4,865,486	2,939,863	*1,925,623

*Decrease.

San Diego District

	Season 1934–35	Season 1935–36	Increase
Tons of sardines received for canning	619	1,436	817
Tons of sardines received under permit for meal and oil	4,240	9,053	4,813
Total tons of sardines received for all purposes	4,859	10,489	5,630
Cases of 1-lb. oval cans packed	12,480	17,047	4,567
Cases of other size cans packed	13,058	19,856	6,798
Other size cans reduced to equivalent cases of 1-lb. ovals	848	1,945	1,097
Meal, tons	111,252	210,171	98,919
Oil, gallons			

All Districts Combined (Shore Plants)

	Season 1934–35	Season 1935–36	Increase
Tons of sardines received for canning	138,109	237,537	99,428
Tons of sardines received under permit for meal and oil	342,339	168,922	*173,417
Tons of sardines received for salting, pet food, etc.	298	707	409
Total tons of sardines received for all purposes	480,746	407,166	*73,580
Cases of 1-lb. oval cans packed	1,486,343	1,936,154	449,811
Cases of other size cans packed	381,929	1,205,342	823,413
Other size cans reduced to equivalent cases of 1-lb. ovals	390,279	1,280,761	890,482
Meal, tons	77,651	59,904	*17,747
Oil, gallons	16,870,565	13,200,692	*3,669,873

*Decrease.

SARDINE CATCH, CASE PACK, MEAL AND OIL PRODUCTION

For Sardine Packing Seasons

Sardine Catch, Tons

Season	Monterey and Northern California	San Pedro district	San Diego district	Total
1925–1926	69,259	61,992	5,214	136,465
1926–1927	79,343	64,216		143,559
1927–1928	109,744	67,459	3,973	181,176
1928–1929	131,859	119,180	1,394	252,433
1929–1930	180,089	140,432	2,079	322,600
1930–1931	133,421	38,580		172,001
1931–1932	88,763	42,557		131,320
1932–1933	106,674	83,492		190,166
1933–1934	187,404	124,950	1,488	313,842
1934–1935	297,132	178,755	4,859	480,746
1935–1936	258,344	138,333	10,489	407,166

Sardines, 1-Lb. Ovals, Cases

Season	Monterey and Northern California	San Pedro district	San Diego district	Total
1925–1926	940,906	968,495	66,074	1,975,475
1926–1927	1,202,516	968,858		2,189,374
1927–1928	1,474,162	878,175	39,380	2,391,717
1928–1929	1,520,192	1,140,488	12,383	2,673,063
1929–1930	2,004,044	1,493,615	16,551	3,514,210
1930–1931	1,336,225	403,041		1,739,266
1931–1932	990,104	470,796		1,460,900
1932–1933	410,469	321,794		732,263
1933–1934	970,504	526,540		1,497,044
1934–1935	894,584	591,759		1,486,343
1935–1936	1,256,051	680,103		1,936,154

Other Size Cans Reduced to Equivalents of 1-Lb. Ovals, Cases

Season	Monterey and Northern California	San Pedro district	San Diego district	Total
1925–1926	35,956	16,361	13,065	65,382
1926–1927	21,673	63,264		84,937
1927–1928	54,985	145,143	31,995	232,123
1928–1929	115,664	173,540	10,368	299,572
1929–1930	169,462	458,416	12,552	640,430
1930–1931	246,316	170,388		416,704
1931–1932	52,197	159,066		211,263
1932–1933	15,944	75,775		91,719
1933–1934	123,688	331,631	5,396	460,715
1934–1935	154,560	222,661	13,058	390,279
1935–1936	633,788	627,117	19,856	1,280,761

Sardine Meal, Tons

Season	Monterey and Northern California	San Pedro district	San Diego district	Total
1925–1926	6,413	5,962	467	12,842
1926–1927	6,675	5,962		12,637
1927–1928	10,538	7,128	184	17,850
1928–1929	13,782	14,802	140	28,724
1929–1930	18,953	16,258	251	35,462
1930–1931	14,206	4,317		18,523
1931–1932	10,128	4,911		15,039
1932–1933	16,667	14,060		30,727
1933–1934	27,279	19,166	262	46,707
1934–1935	46,967	29,836	848	77,651
1935–1936	38,537	19,422	1,945	59,904

Sardine Oil, Gallons

Season	Monterey and Northern California	San Pedro district	San Diego district	Total
1925–1926	1,113,612	658,817	43,995	1,816,424
1926–1927	1,562,351	682,796		2,245,147
1927–1928	1,859,982	711,579	10,253	2,581,814
1928–1929	2,939,579	2,178,815	6,857	5,125,251
1929–1930	4,362,002	1,986,704	11,071	6,359,777
1930–1931	4,127,555	630,011		4,757,566
1931–1932	2,755,282	762,701		3,517,983
1932–1933	4,336,345	2,161,476		6,497,821
1933–1934	5,995,301	3,242,899	24,303	9,262,503
1934–1935	11,893,827	4,865,486	111,252	16,870,565
1935–1936	10,050,658	2,939,863	210,171	13,200,692

Sardine Oil Production, Gallons Per Ton

Season	Monterey and Northern California	San Pedro district	San Diego district
1930–1931	43.4	26.3	
1931–1932	43.9	28.5	
1932–1933	45.3	29.1	
1933–1934	37.5	31.3	17.7
1934–1935	43.9	30.7	24.7
1935–1936	47.5	27.9	21.0

CASE PACK, MEAL AND OIL PRODUCTION FOR CALENDAR YEARS 1916-1935

Sardines, 1-Lb. Ovals, Cases

Year	Monterey and Northern California	San Pedro district	San Diego district	Total
1916	97,100	2,512	7,133	106,745
1917	331,065	43,221	34,380	408,666
1918	593,315	136,632	17,790	747,737
1919	798,566	113,909	33,594	946,069
1920	687,777	213,714	50,302	951,793
1921	287,954	77,048	1,189	366,191
1922	353,188	340,860	3,595	697,643
1923	580,464	488,885	19,215	1,088,564
1924	631,286	693,133	12,135	1,336,554
1925	737,743	920,191	29,846	1,687,780
1926	1,158,133	861,088	63,410	2,082,631
1927	1,341,872	1,046,453	14,947	2,403,272
1928	1,511,535	945,676	39,755	2,496,966
1929	2,039,526	1,438,159	12,225	3,489,910
1930	1,579,408	863,254	15,500	2,458,162
1931	1,004,215	498,996	----------	1,503,211
1932	459,756	415,874	----------	875,630
1933	838,533	365,750	----------	1,204,283
1934	1,091,158	531,619	----------	1,622,777
1935	1,126,466	615,808	----------	1,742,274

Fish Meal, Tons

Year	Monterey and Northern California	San Pedro district	San Diego district	Total
1916	249	261	25	535
1917	875	2,606	----------	3,481
1918	2,874	4,737	1,123	8,734
1919	3,812	5,667	1,674	11,153
1920	3,969	3,328	1,559	8,856
1921	2,115	3,566	636	6,317
1922	2,695	5,373	959	9,027
1923	3,806	4,216	1,216	9,238
1924	6,601	7,726	1,001	15,328
1925	7,105	13,023	2,808	22,936
1926	7,807	7,066	1,394	15,767
1927	9,347	9,746	2,018	21,111
1928	12,575	12,923	2,367	27,865
1929	19,216	20,040	3,565	42,821
1930	17,127	13,653	4,859	35,639
1931	12,013	7,600	2,827	22,440
1932	14,995	9,846	2,659	27,500
1933	23,810	18,249	4,310	46,369
1934	45,630	27,236	4,858	77,724
1935	40,960	31,163	6,572	78,695

Includes meal produced from sardines and other species of fish.

Fish Oil, Gallons

Year	Monterey and Northern California	San Pedro district	San Diego district	Total
1916	25,563		500	26,063
1917	92,393	83,900		176,293
1918	261,466	67,858	17,400	346,724
1919	341,173	146,298	26,791	514,262
1920	419,474	152,937	39,174	611,585
1921	226,826	93,305	16,607	336,738
1922	295,858	244,310	6,882	547,050
1923	576,553	346,883	28,452	951,888
1924	1,240,296	1,059,001	51,425	2,350,722
1925	1,246,561	1,715,633	187,847	3,150,041
1926	1,418,512	651,006	54,410	2,123,928
1927	1,759,480	763,905	95,105	2,618,490
1928	2,456,716	1,268,518	24,068	3,749,302
1929	4,205,118	2,280,991	62,017	6,548,126
1930	4,517,881	1,282,893	41,989	5,842,763
1931	3,098,817	818,364	7,511	3,924,692
1932	3,805,760	1,293,961	25,678	5,125,399
1933	5,143,062	2,585,784	58,948	7,787,794
1934	11,812,236	4,221,447	94,525	16,128,208
1935	9,841,090	3,821,566	261,482	13,924,138

Includes oil produced from sardines and other species of fish.

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